ENVIRONMENTAL SERVICES
SPB05-894P-EE

1. PARTIES

THIS CONTRACT, is entered into by and between the State of Montana, Department of Administration, State Procurement Bureau, (hereinafter referred to as "the State"), whose address and phone number are Room 165 Mitchell Building, 125 North Roberts, PO Box 200135, Helena MT 59620-0135, (406) 444-2575 and **Watershed Consulting, LLC**, (hereinafter referred to as the "Contractor"), whose nine digit Federal ID Number, address and phone number are 81-0535127, 635 Denver St, Whitefish MT 59937, and (406) 862-3565.

THE PARTIES AGREE AS FOLLOWS:

2. PURPOSE

The purpose of this term contract is to establish a list of Environmental Service Providers in several service areas. All qualified offerors will be assembled into a multiple contractor term contract for use by state agencies and other public procurement units. The State makes no guarantee of use by any agency-authorized access to this term contract. However, through data conveyed by the Montana Department of Environmental Quality, Montana Department of Natural Resources and Conservation, and Montana Fish, Wildlife and Parks, it is anticipated that this term contract should access approximately 2.5 million dollars or more annually.

3. EFFECTIVE DATE, DURATION, AND RENEWAL

3.1 Contract Term. This contract shall take effect upon execution of all signatures, and terminate on June 30, 2008, unless terminated earlier in accordance with the terms of this contract. (Mont. Code Ann. § 18-4-313.)

3.2 Contract Renewal. This contract may, upon mutual agreement between the parties and according to the terms of the existing contract, be renewed in one-year intervals, or any interval that is advantageous to the State, for a period not to exceed a total of three additional years. This renewal is dependent upon legislative appropriations.

3.3 Addition of Analytical Laboratory Contractor. Proposals will be accepted between April 1 and May 1 of each calendar year from current firms requesting review of their qualifications to perform Analytical Laboratory Services as originally requested under RFP SPB05-894P. The state will evaluate each proposal received in the exact manner in which the original proposals for other categories were evaluated. If proposal passes the requirements as evaluated to perform Analytical Lab Services, the state will update that firms term contract to include the Analytical Lab Services category contingent on said firm being in good standing otherwise.

4. NON-EXCLUSIVE CONTRACT

The intent of this contract is to provide state agencies with an expedited means of procuring supplies and/or services. This contract is for the convenience of state agencies and is considered by the State Procurement Bureau to be a "Non-exclusive" use contract. Therefore, agencies may obtain this product/service from sources other than the contract holder(s) as long as they comply with Title 18, MCA, and their delegation agreement. The State Procurement Bureau does not guarantee any usage.

5. COOPERATIVE PURCHASING

Under Montana law, public procurement units, as defined in section 18-4-401, MCA, have the option of cooperatively purchasing with the State of Montana. Public procurement units are defined as local or state public procurement units of this or any other state, including an agency of the United States, or a tribal procurement unit. Unless the bidder/offeror objects, in writing, to the State Procurement Bureau prior to the

award of this contract, the prices, terms, and conditions of this contract will be offered to these public procurement units.

6. TERM CONTRACT REPORTING

Term contract holder(s) shall furnish annual reports of term contract usage. Each report shall contain complete information on all public procurement units utilizing this term contract. Minimum information required to be included in usage reports: name of the agency or governmental entity who contacted you regarding a potential project; project title; agency contact person; if the project was not successfully negotiated, state the reason; number and title of contracts received; total dollar amounts for contracts received; the names of your company personnel involved in the project; and project status as of usage report date. The report for this term contract will be due on July 20th of each year.

Reported volumes and dollar totals may be checked by the State Procurement Bureau against State records for verification. Failure to provide timely or accurate reports is justification for cancellation of the contract and/or justification for removal from consideration for award of contracts by the State.

7. COST/PRICE ADJUSTMENTS

7.1 Cost Increase by Mutual Agreement. After the initial term of the contract, each renewal term may be subject to a cost increase by mutual agreement. Contractor must provide written, verifiable justification for any cost adjustments they request during each renewal period. Contractor shall provide its cost adjustments in both written and electronic format.

7.2 Differing Site Conditions. If, during the term of this contract, circumstances or conditions are materially different than set out in the specifications, the Contractor may be entitled to an equitable adjustment in the contract price. The Contractor shall immediately cease work and notify, in writing, the State of any such conditions necessitating an adjustment as soon as they are suspected and prior to the changed conditions affecting the performance of this contract. Any adjustment shall be agreed upon in writing by both parties to the contract.

7.3 Cost/Price Adjustment. All requests for cost/price adjustment must be submitted between April 1st and April 30th along with written justification. Requests received after April 30th will not be considered unless written approval from the SPB Contracts Officer is given to submit at a later date. In no event will cost/price adjustments be allowed beyond May 15th. All requests that are approved will be incorporated by contract amendment and made effective July 1st of the next approved renewal period.

8. SERVICES AND/OR SUPPLIES

8.1 Service Categories. Contractor agrees to provide to the State the following services:

Water Quality Monitoring – Fixed Station and Probabilistic Design. The statewide monitoring network has three components. The first component is the fixed station water quality-monitoring network. There are 38 fixed station sites located on streams throughout Montana where there are active USGS gauging stations. The USGS is currently contracted to collect all of the water chemistry samples. The State may also collect sediment samples for trace metal analyses. Remote sensing may be used to assess stream geomorphology, flood plain and watershed characteristics.

Water Quality Monitoring - Lakes and Streams. As part of the monitoring program, standards criteria and TMDL development, lakes will continue to be sampled collecting chemistry, physical, and habitat parameters. Stream sampling may include sediment and water chemistry, geomorphology, habitat, or sources of pollutants (e.g., pebble counts, channel cross-section, stream reach assessments, photo points, Rosgen Type II, etc GIS and remote sensing may be used to assess riparian habitats, and watershed physical characteristics.

Water Quality Monitoring - Reference Sites. As part of the monitoring program and standards criteria development, reference sites will continue to be identified and characterized as described above.

TMDL Targets. The TMDL program (within DEQ) will often need additional data in order to develop TMDL targets. Targets are quantitative water quality goals or "endpoints" that represent all the applicable narrative or numeric water quality standards. These targets, when achieved will represent full beneficial use support. This may require additional monitoring to determine reference condition when TMDL targets are based on narrative criteria or designated uses (water quality standards). Targets may be based on numeric water quality criteria, pollutant concentrations or loads, habitat or geomorphic measures, and/or biological criteria or populations. Targets are also used to determine the existing Water Quality Impairment Status (WQIS) of the streams on the 303(d) list. In most cases, the contractor will be required to write a report, which includes a recommendation and justification for one or more TMDL targets and also compare those targets to the existing conditions to determine WQIS. Communication with the State is crucial while deriving preliminary targets to ensure TMDL consistency across Montana.

TMDL Source Assessment/Delineation. The TMDL program (within DEQ) will often need additional data in order to link water quality impairments to their sources, or to allocate sources of pollutants. This may require data compilation, investigative monitoring and statistical analysis within a specified watershed, which can be used for source allocation, or the linkage of water quality impairments to causes and sources of impairment (e.g., sediment or land use practices). Quantitative source assessments may be conducted using field-based monitoring and/or interpretation and analysis of aerial photos, digital images, or GIS coverages depending upon impairment sources and available information. In most cases, contractors will be required to write a report that identifies what the major causes of impairment are and where the major sources of pollutants are located. DEQ will also need to have all pollution/pollutant sources quantified. The quantification of these loads will assist in both source load allocations and the total maximum daily loads. In addition, data collected during source assessments must be entered into an approved database structure or format and linkage to the National Hydrography Dataset (NHD) streams layer may be requested. The department may also request a cost/benefit analysis for implementing BMPs, which can be used for developing TMDL source allocations. Communication with the State is crucial while deriving assessing sources of pollutants to ensure TMDL consistency across Montana.

Stakeholder Participation. The TMDL program (within DEQ) will often need additional assistance in order to develop implementation/restoration strategies and monitoring plans. These plans often require public involvement with the local stakeholders. These efforts typically results in developing the measures needed to achieve full beneficial use support or to monitoring the uncertainties that arise during the TMDL process. Offerors should be experienced in or have staff members with proper credentials to facilitate participation with local stakeholders.

TMDL Effectiveness Monitoring. Effectiveness monitoring will be required to evaluate the success of implementing a TMDL plan. Monitoring will often include the collection of some combination of chemical, physical or biological data, which can be used to determine if water quality is improving over time. Most monitoring designs and techniques will be fairly straightforward and may only require visiting a site once per year. In most cases, the contractor will be required to write an annual report, which can be used to determine if water quality is improving.

Geographic Information Systems (GIS) Services. The State, and in particular DEQ, will need assessments that characterize a watershed and identify and quantify all probable sources of pollutants. GIS maps will be required for every waterbody that is assessed. Thematic maps may include, but are not limited to: land ownership, land use, topography, hydrology, soils, precipitation, and/or endangered species distribution. In addition, DEQ may request that GIS applications be used to facilitate the interpretation and analysis of digital images and/or other georeferenced data.

Remote Sensing. The State may consider the use of remote sensing for characterizing a watershed and identifying probable sources of pollutants. For example, indicator metrics may be calculated from an air photo. Metrics may include active channel width, Rosgen level 1 Channel types, % shade, % land use, % land cover, average flood plain width, riparian corridor fragmentation, road density, road crossings, length of irrigation ditch/area, etc. DEQ may request contractors to assist them in developing remote sensing assessment techniques or to employ developed techniques in conducting detailed assessments. All data must be entered into an approved database structure, format, or program and linkage to the National Hydrography Dataset (NHD) streams layer may be requested. If necessary, the Contractor can subcontract in order to

acquire the aerial photography products. All subcontractors for this task must be approved by the State prior to initiating a contract.

Water Quality Modeling. The State, and in particular DEQ, uses contracted services in the development and/or application of watershed and water quality modeling tools and techniques in the development of TMDLs. Models may be used to assist in defining TMDL loading allocations, performing existing/potential conditions analysis, watershed scenario analysis, and/or standards attainment analysis. The types of models that may be employed include dynamic watershed loading models (i.e. SWAT, HSPF), water quality fate and transport models (i.e. QUAL2E, QUAL2K), stream temperature and/or shade models (i.e. SSTemp, HeatSource, Shadow), and multi-dimensional lake/reservoir models (i.e. CE QUAL W2). In addition, simpler modeling tools and techniques such as GIS-based Risk Assessment Modeling may be employed or developed based on project needs and resources. The DEQ may also seek assistance in the identification and/or development of simple modeling tools that may be implemented at the desktop that facilitate quick scenario applications. These tools should be able to focus on specific water quality issues such as sediment, nutrients, salinity, etc. and be tailored to the various (eco) regions across the state.

Statistical Analysis. The State may request that large data sets be statistically analyzed for determining trends or for making comparisons. This service area may include data compilation, organization, manipulation and analysis. These analyses may be used to validate environmental targets by comparing reference data to existing data. They may also be used to establish a relationship or linkage between indicators and targets, the estimated loads and how targets link to beneficial use support. Analyses should be appropriate for the type of data being analyzed. In many cases, the contractor will be responsible for determining and providing rationale for appropriate statistical analyses to address pre-formulated environmental hypotheses. Analyses must consider spatial and temporal variations. Analyses may range from providing simple descriptive statistics to reporting multifactor predictive analyses.

Revegetation Services. Revegetation Specialists are utilized by the State and other governmental entities to enhance and complete environmental project tasks. The services offered by Revegetation Specialists are planning, designing, implementation along with providing of supplies, materials and equipment necessary to carryout the tasks. If a firm does not have the staff or equipment to implant a project, they must then be able to demonstrate a plan for delivery of product and implementation of a project through subcontracting or professional cooperative agreements.

Communication/Educational Services – Information & Education. Communication/education contractor specializing in information and education would assist in implementing the statewide information and education program for designated environmental projects. An example would be for the non-point sources of pollution as defined in the federal Clean Water Act. Some potential activities related to the aforementioned example are: hydromodification, stormwater runoff, raising livestock, farming, logging, land disposal, construction, historic mining districts, atmospheric deposition, transportation, and habitat modification. The Information and Education services would be targeted towards specific projects develop by the State or governmental entities.

Communication/Education Services – Information Transfer & TMDL Technical Editing. Communication/education contractor specializing in information transfer would assist in the design, production and distribution of information for target audiences via TV, radio, or print media. These projects often require the conversion of complex water quality data into information the public can understand. Products include pamphlets, brochures, guidebooks, and videos; maintaining a webpage, writing press releases; set up public meetings, give interviews, make presentations at workshops and conferences and organize conferences and set up field trips. Offerors in this field may also specify their ability to provide Technical Editing of Natural Science documents, in particular Total Maximum Daily Load documents. Technical editing can include, but is not limited to proofreading for grammar and mathematical errors, document clarity, and linkage between different sections.

Land Use Planning Services. Land use planning services would include Agricultural Land Use, Watershed Land Use or any other land planning services to benefit the state or other governmental entity. The Land Use Planning efforts can include soil analysis, crop recommendations, and irrigation recommendations to assist in developing a beneficial plan for the land in question.

8.2 Reuse of Documents. When the projects dictate a design or engineered approach, the State agrees that it will not apply the Contractor's designs to any other projects.

9. ENGINEERING ACCESS

All of the firms selected may need to have access to engineering services depending on the nature of the project. The contractor(s) will be expected to use their own best judgment as to whether engineering services are needed for a given project. However, traditional engineering methodologies are not the emphasis of this RFP. It is a violation of State Statute to practice engineering or land surveying without a license.

10. PROJECT SELECTION

10.1 Project Identification. The State will be responsible for identifying projects, contacting landowners and securing necessary permission/cooperation agreements, selecting a contractor, writing grant applications and approving project payments.

10.2 Hazardous Materials. The State will not initiate projects where it is known that hazardous materials are present. If there is an indication of a potential of hazardous materials, then the State will do testing prior to contacting the contractor. However, there is always the possibility of unforeseen problems resulting in the stoppage of a project.

10.3 Meetings. The selected contractor may be required to meet with State personnel at the project site to conduct a site evaluation, discuss project issues and begin the negotiation process on project feasibility, conceptual design and costs for each project.

10.4 Approach Expectations. In the case of restoration activities, the agency will identify the preferred techniques. The determination made by the State may define which contractor(s) are contacted for project initiation. The State is always open to new and innovative approaches that accomplish project goals.

11. SELECTING A CONTRACTOR

The State may select a term contract holder from the Environmental Services contract home page as provided under the state's website address http://www.discoveringmontana.com/doa/gsd/procurement/TermContracts/environservices/Default.asp, taking into consideration such things as the contractor's area of expertise, requirements and location of the project, the contractor's availability and access to resources necessary to efficiently and effectively complete the project, demonstrated excellent past performance on State and public projects, identified subcontractors and total project cost.

General. Ordering agencies shall use the procedures in this section when ordering services priced at hourly rates as established by each Term Contract (TC). The applicable service categories are identified in each TC along with the contractor's price lists.

Request for Quotation (RFQ) procedures. The ordering agency must provide an RFQ, which includes the statement of work and limited, but specific evaluation criteria (*e.g.*, experience and past performance), to TC contractors that offer services that will meet the agency's needs. The RFQ may be posted to the agency's state website to expedite responses.

Statement of Work (SOWs). All SOW's shall include at a minimum a detailed description of the work to be performed, location of work, period of performance, deliverable schedule, applicable performance standards and any special requirements (e.g., security clearances, travel, special knowledge).

(1) Ordering agency may select a contractor from the appropriate service category and directly negotiate a mutually acceptable project based on a sudden and unexpected happening or unforeseen occurrence or condition, which requires immediate action. (Exigency).

(2) Ordering agency may place orders at or below the $5,000 threshold with any TC contractor that can meet the agency's needs. The ordering agency should attempt to distribute orders among all service category contractors.

(3) For orders estimated to exceed $5,000 but less than $25,000.

(i) The ordering agency shall develop a statement of work.
(ii) The ordering agency shall provide the RFQ (including the statement of work and evaluation criteria) to at least three TC contractors that offer services that will meet the agency's needs.

(iii) The ordering agency shall request that contractors submit firm-fixed prices to perform the services identified in the statement of work.

(4) For orders estimated to exceed $25,000. In addition to meeting the requirements of (3) above, the ordering agency shall:

(i) Provide the RFQ (including the statement of work and the evaluation criteria) to a minimum of six service category TC contractors (if category has less than 6, all contractors will be offered an RFQ) with a 50% replacement factor for each subsequent request for quote in the same service category.

Evaluation. The ordering agency shall evaluate all responses received using the evaluation criteria provided in the RFQ to each TC contractor. The ordering agency is responsible for considering the level of effort and the mix of labor proposed to perform a specific task being ordered, and for determining that the total price is reasonable. The agency will place the order with the contractor that represents the best value. After award, ordering agencies will provide timely notification to unsuccessful TC contractors. If an unsuccessful TC contractor requests information on a task order award that was based on factors other than price alone, a brief explanation of the basis for the award decision shall be provided.

Minimum documentation. The ordering agency shall document:
(1) The TC contractors considered, noting the contractor from which the service was purchased.
(2) A description of the service purchased.
(3) The amount paid.
(4) The evaluation methodology used in selecting the contractor to receive the order.
(5) The rationale for making the selection.
(6) Determination of price fair and reasonableness.

Agency project task orders will be utilized to finalize the project. Only written addenda will be used for adjustments of the task orders and must be signed by both parties. All task orders must contain signatures from both parties and appropriate agency legal review as directed in their procurement policy.

The State will monitor contractor selection by using the information provided in the annual TC usage reports.

Contractor's who fail to respond to three RFQ opportunities within a one-year period between July 1st and June 30th may be removed from the qualified list of contractors.

12. CONTRACTOR RESPONSIBILITIES

12.1 Supervision and Implementation. The selected contractor for an individual project will be responsible for the supervision and implementation of the approach and will be responsible for oversight of work performed by all subcontractors. In most cases the contractor will provide and be responsible for all the necessary equipment, materials, supplies and personnel necessary for proper execution of the work. However, the State reserves the right to hire subcontractors (equipment and/or labor) if it will provide a cost savings to the State. The selected contractor will also be responsible for clean up of the sites if necessary and must have the sites inspected by the State immediately prior to completion.

12.2 On-Site Requirements. When a contractor is contacted by the State to discuss a project, the State and the contractor may visit the job site if deemed necessary by the Project Manager, to become familiar with conditions relating to the project and the labor requirements. The State will provide a detailed scope of

work for the project and request the contractor supply the State with a response to project approach, cost, timeframe and any other information deemed necessary by the State to make a selection or complete a contract negotiation.

In the cases of Restoration or On-The-Ground Activities, the contractor shall adequately protect the work, adjacent property, and the public in all phases of the work. They shall be responsible for all damages or injury due to their action or neglect.

The contractor shall maintain access to all phases of the contract pending inspection by the State, the landowner, or their representative. All interim or final products funded by the contract will become the property of the State or Cooperative Purchaser upon payment for said products.

All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance. The contractor shall respond within seven calendar days after notice of observed defects has been given and shall proceed to immediately remedy these defects. Should the contractor fail to respond to the notice or not remedy the defects, the State may have the work corrected at the expense of the contractor.

12.3 Clean Up (when project tasks require). The contractor shall:

- Keep the premises free from debris and accumulation of waste;
- Clean up any oil or fuel spills;
- Keep machinery clean and free of weeds;
- Remove all construction equipment, tools and excess materials; and
- Perform finishing site preparation to limit the spread of noxious weeds before final payment by the State.

12.4 Applicable Laws. The contractor shall keep informed of, and shall comply with all applicable laws, ordinances, rules, regulations and orders of the City, County, State, Federal or public bodies having jurisdiction affecting any work to be done to provide the services required. The contractor shall provide all necessary safeguards for safety and protection, as set forth by the United States Department of Labor, Occupational Safety and Health Administration.

12.5 Cooperation. The contractor shall work closely with the States analytical consultants, (i.e. environmental laboratories and taxonomists) to develop the desired products.

12.6 Work Acceptance. The contractor is responsible for project oversight as needed. The State may also periodically provide personnel for administrative oversight from the initiation of the contract through project completion. All work will be inspected by the State or designated liaison prior to approval of any contract payments. All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance. Contractor shall respond within seven calendar days after notice of defects has been given by the State and proceed to immediately remedy all defects.

12.7 Records. The contractor will supply the State with documentation, when requested, of methods used throughout project implementation. Contractor will maintain records for themselves and all subcontractors of supplies, materials, equipment and labor hours expended.

12.8 Communication. Remoteness of project sites may necessitate that the contractor have some form of field communication such as a cellular phone. This communication is necessary to enable the State to respond to public concerns related to the project, accidents, inspections, or other project issues that require immediate feedback. In addition, the State or Cooperative Purchaser may require scheduled communication at agreed upon intervals. The communication schedule will be dependent upon the project circumstances and requirements of the contracting agency. In the case when a communication schedule is included in the Scope of Work, the schedule will commence when the contractor initiates the project.

12.9 Change of Staffing. Since qualifications of personnel were key in determining which offerors were selected to be on this TC, a written notification of any changes in key personnel must be made to the state agency, prior to entering into negotiations to perform any specific work scope. Contractor shall replace such employee(s) at its own expense with an employee of substantially equal abilities and qualifications

without additional cost to the agency. If these staffing changes cause the contractor to no longer meet the qualifications stated herein, that firm will be removed from the service area of this TC. Failure to notify the state agency of staffing changes could result in the contractor being removed from the TC listing and possible suspension from bidding on other state projects.

12.10 Collaboration. The State encourages collaboration between contractors to increase the scope of services offered. In cases where the chosen contractor is not able to provide all services needed for the project, the State will expect the chosen contractor to contact other contractors on this list to negotiate subcontracts for these services before going elsewhere. Exceptions to this strategy will be evaluated on a case-by-case basis.

12.11 Subcontractors, Project Budget and Invoicing. All subcontractors to be used in any project must be approved by the authorized entity initiating the project. Project budgets will be negotiated for each individual project contract. However, all rates, terms and conditions set forth in this term contract will be applied to individual contracts. Subcontractor is defined as anyone other than the prime contractor having substantial direct involvement in a specific project.

The State reserves the right to choose the invoicing method from the following:

- Prime contractor's billing will include the subcontractors charges and payment will be made to the prime, or
- Prime and subcontractors will bill the State separately and the State will pay each directly.

13. CONSIDERATION/PAYMENT

13.1 Payment Schedule. In consideration for the services to be provided, the State shall pay according to the negotiated agreement for each project. Hourly rates and miscellaneous charges as provided in Attachment B shall apply.

13.2 Withholding of Payment. The State may withhold payments to the Contractor if the Contractor has not performed in accordance with this contract. Such withholding cannot be greater than the additional costs to the State caused by the lack of performance.

14. CONTRACTOR REGISTRATION

The Contractor will be registered with the Department of Labor and Industry under sections 39-9-201 and 39-9-204, MCA, *prior* to contract execution. The State cannot execute a contract for construction to a Contractor who is not registered. (Mont. Code Ann. § 39-9-401.)

Rowe Excavation, Dillon MT	Contractor Registration Number: 41518
Wolf Creek Rock & Gravel LLC	Contractor Registration Number: 148893
John Fitchett, Heron MT	Contractor Registration Number: (can not be used until registration number is submitted)

15. CONTRACTOR WITHHOLDING

Section 15-50-206, MCA, requires the state agency or department for whom a public works construction contract over $5,000 is being performed, to withhold 1 percent of all payments and to transmit such monies to the Department of Revenue.

16. MONTANA PREVAILING WAGE REQUIREMENTS

Unless superseded by federal law, Montana law requires that contractors and subcontractors give preference to the employment of Montana residents for any public works contract in excess of $25,000 for construction or nonconstruction services in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Unless superseded by federal law, at least 50% of the workers of each contractor engaged in construction services must be performed by bona fide Montana residents. The Commissioner of the Montana Department of Labor and Industry has established the resident requirements in

accordance with sections 18-2-403 and 18-2-409, MCA. Any and all questions concerning prevailing wage and Montana resident issues should be directed to the Montana Department of Labor and Industry.

In addition, unless superseded by federal law, all employees working on a public works contract shall be paid prevailing wage rates in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Montana law requires that all public works contracts, as defined in section 18-2-401, MCA, in which the total cost of the contract is in excess of $25,000, contain a provision stating for each job classification the standard prevailing wage rate, including fringe benefits, travel, per diem, and zone pay that the contractors, subcontractors, and employers shall pay during the public works contract.

Furthermore, section 18-2-406, MCA, requires that all contractors, subcontractors, and employers who are performing work or providing services under a public works contract post in a prominent and accessible site on the project staging area or work area, no later than the first day of work and continuing for the entire duration of the contract, a legible statement of all wages and fringe benefits to be paid to the employees in compliance with section 18-2-423, MCA. Section 18-2-423, MCA, requires that employees receiving an hourly wage must be paid on a weekly basis.

Each contractor, subcontractor, and employer must maintain payroll records in a manner readily capable of being certified for submission under section 18-2-423, MCA, for not less than three years after the contractor's, subcontractor's, or employer's completion of work on the public works contract.

The nature of the work performed or services provided under this contract meets the statutory definition of a "public works contract" under section 18-2-401(11)(a), MCA, and falls under the category of Heavy Construction and Nonconstruction services. The booklets containing Montana's 2003 Rates for Heavy Construction and Nonconstruction Services are attached.

The most current Montana Prevailing Wage Booklet will automatically be incorporated at time of renewal. It is the contractor's responsibility to ensure they are using the most current prevailing wages during performance of its covered work.

17. ACCESS AND RETENTION OF RECORDS

17.1 Access to Records. The Contractor agrees to provide the State, Legislative Auditor or their authorized agents access to any records necessary to determine contract compliance. (Mont. Code Ann. § 18-1-118.)

17.2 Retention Period. The Contractor agrees to create and retain records supporting the environmental services for a period of three years after either the completion date of this contract or the conclusion of any claim, litigation or exception relating to this contract taken by the State of Montana or a third party.

18. ASSIGNMENT, TRANSFER AND SUBCONTRACTING

The Contractor shall not assign, transfer or subcontract any portion of this contract without the express written consent of the State. (Mont. Code Ann. § 18-4-141.) The Contractor shall be responsible to the State for the acts and omissions of all subcontractors or agents and of persons directly or indirectly employed by such subcontractors, and for the acts and omissions of persons employed directly by the Contractor. No contractual relationships exist between any subcontractor and the State.

19. HOLD HARMLESS/INDEMNIFICATION

The Contractor agrees to protect, defend, and save the State, its elected and appointed officials, agents, and employees, while acting within the scope of their duties as such, harmless from and against all claims, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of the Contractor's employees or third parties on account of bodily or personal injuries, death, or damage to property arising out of services performed or omissions of services or in any way resulting from the acts or omissions of

the Contractor and/or its agents, employees, representatives, assigns, subcontractors, except the sole negligence of the State, under this agreement.

20. REQUIRED INSURANCE

20.1 General Requirements. The Contractor shall maintain for the duration of the contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the work by the Contractor, agents, employees, representatives, assigns, or subcontractors. This insurance shall cover such claims as may be caused by any negligent act or omission.

20.2 Primary Insurance. The Contractor's insurance coverage shall be primary insurance as respect to the State, its officers, officials, employees, and volunteers and shall apply separately to each project or location. Any insurance or self-insurance maintained by the State, its officers, officials, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

20.3 Specific Requirements for Commercial General Liability. The Contractor shall purchase and maintain occurrence coverage with combined single limits for bodily injury, personal injury, and property damage of $1,000,000 per occurrence and $2,000,000 aggregate per year to cover such claims as may be caused by any act, omission, or negligence of the Contractor or its officers, agents, representatives, assigns or subcontractors.

20.4 Additional Insured Status. The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insureds; for liability arising out of activities performed by or on behalf of the Contractor, including the insured's general supervision of the Contractor; products and completed operations; premises owned, leased, occupied, or used.

20.5 Specific Requirements for Automobile Liability. The Contractor shall purchase and maintain coverage with split limits of $500,000 per person (personal injury), $1,000,000 per accident occurrence (personal injury), and $100,000 per accident occurrence (property damage), OR combined single limits of $1,000,000 per occurrence to cover such claims as may be caused by any act, omission, or negligence of the contractor or its officers, agents, representatives, assigns or subcontractors.

20.6 Additional Insured Status. The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insureds for automobiles leased, hired, or borrowed by the Contractor.

20.7 Specific Requirements for Professional Liability. The Contractor shall purchase and maintain occurrence coverage with combined single limits for each wrongful act of $1,000,000 per occurrence and $2,000,000 aggregate per year to cover such claims as may be caused by any act, omission, negligence of the Contractor or its officers, agents, representatives, assigns or subcontractors. Note: if "occurrence" coverage is unavailable or cost prohibitive, the Contractor may provide "claims made" coverage provided the following conditions are met: (1) the commencement date of the contract must not fall outside the effective date of insurance coverage and it will be the retroactive date for insurance coverage in future years; and (2) the claims made policy must have a three year tail for claims that are made (filed) after the cancellation or expiration date of the policy.

20.8 Deductibles and Self-Insured Retentions. Any deductible or self-insured retention must be declared to and approved by the state agency. At the request of the agency either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the State, its officers, officials, employees, or volunteers; or (2) at the expense of the Contractor, the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

20.9 Certificate of Insurance/Endorsements. A certificate of insurance from an insurer with a Best's rating of no less than A- indicating compliance with the required coverages, has been received by the State Procurement Bureau, PO Box 200135, Helena MT 59620-0135. The Contractor must notify the State immediately, of any material change in insurance coverage, such as changes in limits, coverages, change in status of policy, etc. The State reserves the right to require complete copies of insurance policies at all times.

21. COMPLIANCE WITH THE WORKERS' COMPENSATION ACT

Contractors are required to comply with the provisions of the Montana Workers' Compensation Act while performing work for the State of Montana in accordance with sections 39-71-120, 39-71-401, and 39-71-405, MCA. Proof of compliance must be in the form of workers' compensation insurance, an independent contractor's exemption, or documentation of corporate officer status. Neither the contractor nor its employees are employees of the State. This insurance/exemption must be valid for the entire term of the contract. A renewal document must be sent to the State Procurement Bureau, PO Box 200135, Helena MT 59620-0135, upon expiration.

22. COMPLIANCE WITH LAWS

The Contractor must, in performance of work under this contract, fully comply with all applicable federal, state, or local laws, rules and regulations, including the Montana Human Rights Act, the Civil Rights Act of 1964, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. Any subletting or subcontracting by the Contractor subjects subcontractors to the same provision. In accordance with section 49-3-207, MCA, the Contractor agrees that the hiring of persons to perform the contract will be made on the basis of merit and qualifications and there will be no discrimination based upon race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability, or national origin by the persons performing the contract.

23. INTELLECTUAL PROPERTY

All patent and other legal rights in or to inventions created in whole or in part under this contract must be available to the State for royalty-free and nonexclusive licensing. Both parties shall have a royalty-free, nonexclusive, and irrevocable right to reproduce, publish or otherwise use and authorize others to use, copyrightable property created under this contract.

24. PATENT AND COPYRIGHT PROTECTION

24.1 Third Party Claim. In the event of any claim by any third party against the State that the products furnished under this contract infringe upon or violate any patent or copyright, the State shall promptly notify Contractor. Contractor shall defend such claim, in the State's name or its own name, as appropriate, but at Contractor's expense. Contractor will indemnify the State against all costs, damages and attorney's fees that accrue as a result of such claim. If the State reasonably concludes that its interests are not being properly protected, or if principles of governmental or public law are involved, it may enter any action.

24.2 Product Subject of Claim. If any product furnished is likely to or does become the subject of a claim of infringement of a patent or copyright, then Contractor may, at its option, procure for the State the right to continue using the alleged infringing product, or modify the product so that it becomes non-infringing. If none of the above options can be accomplished, or if the use of such product by the State shall be prevented by injunction, the State will determine if the Contract has been breached.

25. CONTRACT TERMINATION

25.1 Termination for Cause. The State may, by written notice to the Contractor, terminate this contract in whole or in part at any time the Contractor fails to perform this contract.

25.2 Reduction of Funding. The State, at its sole discretion, may terminate or reduce the scope of this contract if available funding is reduced for any reason. (See Mont. Code Ann. § 18-4-313(3).)

26. STATE PERSONNEL

26.1 State Contract Manager. The State Contract Manager identified below is the State's single point of contact and will perform all contract management pursuant to section 2-17-512, MCA, on behalf of the State. Written notices, requests, complaints or any other issues regarding the contract should be directed to the State Contract Manager.

The State Contract Manager for this contract is:

Robert Oliver, Contracts Officer
Room 165 Mitchell Building
125 North Roberts
PO Box 200135
Helena MT 59620-0135
Telephone #: (406) 444-0110
Fax #: (406) 444-2529
E-mail: roliver@mt.gov

26.2 State Project Manager. Each using State agency or Cooperative Purchaser will identify a Project Manager in the project task order. The Project Manager will manage the day-to-day project activities on behalf of the State/Cooperative Purchaser.

27. CONTRACTOR PERSONNEL

27.1 Change Of Staffing. Since qualifications of personnel was key in determining which offerors were selected to be on this term contract list, a written notification to the State Procurement Bureau of any changes of key personnel must be made within two weeks of the change. These change notifications will be completed upon the departure or hiring of key personnel who are professional employees critical to awarded service areas. If these staffing changes cause the firm to no longer meet the qualifications stated herein, that firm will be removed from the service area of this term contract. Failure to notify the State Procurement Bureau of staffing changes could result in the contractor being removed from the term contract listing and possible suspension from bidding on other State projects.

27.2 Contractor Contract Manager. The Contractor Contract Manager identified below will be the single point of contact to the State Contract Manager and will assume responsibility for the coordination of all contract issues under this contract. The Contractor Contract Manager will meet with the State Contract Manager and/or others necessary to resolve any conflicts, disagreements, or other contract issues.

The Contractor Contract Manager for this contract is:

Amy Chadwick
635 Denver St
Whitefish MT 59937
Telephone #: (406) 862-3565
Fax #: (406) 862-4341
E-mail: amy@watershedconsulting.com

27.3 Contractor Project Manager. The Contractor Project Manager identified below will manage the day-to-day project activities on behalf of the Contractor:

The Contractor Project Manager for this contract is:

Amy Chadwick
635 Denver St
Whitefish MT 59937
Telephone #: (406) 862-3565
Fax #: (406) 862-4341
E-mail: amy@watershedconsulting.com

28. MEETINGS

The Contractor is required to meet with the State's personnel, or designated representatives, to resolve technical or contractual problems that may occur during the term of the contract or to discuss the progress

made by Contractor and the State in the performance of their respective obligations, at no additional cost to the State. Meetings will occur as problems arise and will be coordinated by the State. The Contractor will be given a minimum of three full working days notice of meeting date, time, and location. Face-to-face meetings are desired. However, at the Contractor's option and expense, a conference call meeting may be substituted. Consistent failure to participate in problem resolution meetings two consecutive missed or rescheduled meetings, or to make a good faith effort to resolve problems, may result in termination of the contract.

29. CONTRACTOR PERFORMANCE ASSESSMENTS

The State may do assessments of the Contractor's performance. This contract may be terminated for one or more poor performance assessments. Contractors will have the opportunity to respond to poor performance assessments. The State will make any final decision to terminate this contract based on the assessment and any related information, the Contractor's response and the severity of any negative performance assessment. The Contractor will be notified with a justification of contract termination. Performance assessments may be considered in future solicitations.

30. TRANSITION ASSISTANCE

If this contract is not renewed at the end of this term, or is terminated prior to the completion of a project, or if the work on a project is terminated, for any reason, the Contractor must provide for a reasonable period of time after the expiration or termination of this project or contract, all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the services to continue without interruption or adverse effect, and to facilitate the orderly transfer of such services to the State or its designees. Such transition assistance will be deemed by the parties to be governed by the terms and conditions of this contract, except for those terms or conditions that do not reasonably apply to such transition assistance. The State shall pay the Contractor for any resources utilized in performing such transition assistance at the most current rates provided by the contract. If there are no established contract rates, then the rate shall be mutually agreed upon. If the State terminates a project or this contract for cause, then the State will be entitled to offset the cost of paying the Contractor for the additional resources the Contractor utilized in providing transition assistance with any damages the State may have otherwise accrued as a result of said termination.

31. CHOICE OF LAW AND VENUE

This contract is governed by the laws of Montana. The parties agree that any litigation concerning this bid, proposal or subsequent contract must be brought in the First Judicial District in and for the County of Lewis and Clark, State of Montana and each party shall pay its own costs and attorney fees. (See Mont. Code Ann. § 18-1-401.)

32. SCOPE, AMENDMENT AND INTERPRETATION

32.1 Contract. This contract consists of 13 numbered pages, any Attachments as required, RFP # SPB05-894P**,** as amended and the Contractor's RFP response as amended. In the case of dispute or ambiguity about the minimum levels of performance by the Contractor the order of precedence of document interpretation is in the same order.

32.2 Entire Agreement. These documents contain the entire agreement of the parties. Any enlargement, alteration or modification requires a written amendment signed by both parties.

33. EXECUTION

The parties through their authorized agents have executed this contract on the dates set out below.

DEPARTMENT OF ADMINISTRATION
STATE PROCUREMENT BUREAU
PO BOX 200135
HELENA MT 59620-0135

BY: _____
Penny Moon, Contracts Officer

BY: _____
(Signature)

DATE: _____

WATERSHED CONSULTING, LLC
410 WISCONSIN AVENUE
WHITEFISH MT 59937
FEDERAL ID # 81-0535127

BY: _____
(Name/Title)

BY: _____
(Signature)

DATE: _____

ATTACHMENT A
CONTRACTOR'S RESPONSE

Introduction

Watershed Consulting has designed a team that offers the local expertise of water resource specialists familiar with the Montana TMDL and statewide water quality monitoring programs and the diverse aquatic systems of eastern and western Montana, coupled with the extensive water assessment, graphics, and engineering capabilities of an international firm. A close look at the firms will reveal that although there are overlapping capabilities, each one has a unique specialty.

Service Team

Watershed Consulting, LLC, has formed a highly-qualified team with Golder Associates Inc. and DVS Environmental Inc. to provide comprehensive water resource environmental services for the State of Montana. Watershed Consulting will serve as the prime contractor in charge of managing the contract and task orders. The State will have one point of contact for all services.

The point of contact is:

Amy Chadwick
Watershed Consulting, LLC
410 Wisconsin, Whitefish, Montana, 59937
(406) 862-3565
amy@watershedconsulting.com

Amy will be the project director and will be responsible for coordination and communication with the State and among firms in the team.

The competent and qualified staff of the cooperating firms have been assigned to services and staffing roles for which their experience and expertise is best suited. All of the subcontractors on the team were chosen for their strengths, talents, and desire to improve water resources, as well as their knowledge of the Montana Nonpoint Source program and the social and political climate affecting the TMDL and other water resource management in Montana.

The firms on the Watershed Consulting team are aware of the short timeframe in which TMDLs and watershed assessments need to be completed. State agencies will benefit from utilizing the experience and expertise of water resources professionals as contractors to conduct water quality monitoring and assessments for the statewide water quality monitoring network and TMDL program. We understand that water resource investigations conducted for Non-point Source TMDLs and other water resource investigations will require a high level of landowner participation and cooperating with landowners to give them a sense of ownership in water quality and watershed restoration efforts. Watershed Consulting has a proven track record in fostering positive working relationships with private landowners, which has resulted in our gaining access privileges as well as having the opportunity to educate landowners about water quality issues and factors influencing stream and watershed condition. We also understand that precise methodology must be followed to provide credible data for TMDL target and beneficial use determinations and for reassessing listed waters. The Watershed Consulting team members are familiar with and follow USGS and DEQ Standard Operating Procedures, and will adhere to EPA-approved quality control/quality assurance plans in monitoring projects.

Roles of Cooperating Firms

Watershed Consulting, LLC

Watershed Consulting has specialized capabilities and expertise necessary for TMDL assessment and development, related monitoring and restoration, and information transfer. Watershed Consulting will be the primary contractor and will be the lead in services related to beneficial use determination, TMDL target development, source characterization and impairment status review, TMDL development, allocations, and reporting, water quality monitoring, beneficial use determinations, reference reach monitoring, effectiveness monitoring, assessment through remote sensing, revegetation, and stakeholder participation.

Watershed Consulting has project experience that included tasks applicable to all of the services to some degree. Our knowledge of these services allows us to cooperate effectively with subcontractors primarily working in other services. Amy Chadwick at Watershed Consulting will be responsible for coordination with project managers at partnering companies on the Watershed Consulting team, and will be the overall project manager and single point of contact for the State.

Golder Associates, Inc.

Golder Associates has the extensive capabilities of a large consulting firm, including modeling and GIS, remote sensing, complete engineering services, publication services, water infrastructure and land use planning, and statistical analysis. Golder will be the primary subcontractor for services related to GIS, water quality and hydraulic modeling, professional engineering in revegetation and bioengineering projects, publishing of brochures and educational materials, land use planning, and statistical analysis of water quality data, and will provide the technical lead for those areas. The Golder Associates water resources personnel have experience in systems similar to those in western and eastern Montana, and routinely work within the framework of a social and political climate similar to that surrounding water quality management in Montana. The Golder employee serving as project manager for their service areas has previous experience in water quality investigations and stream assessment in eastern and western Montana, including coordinating modeling and GIS services at Golder for three current projects in Montana as a subcontractor to Watershed Consulting.

NOTE: DVS Environmental Inc. is now part of Golder Associates. The personnel and experience remain the same.

DVS Environmental, Inc.

DVS Environmental Inc. was founded in 2002 in Coeur d'Alene, Idaho as a small business to provide outstanding and affordable watershed consulting services to North Idaho, Western Montana, and Eastern Washington. Their expertise includes watershed assessment and characterization, environmental sampling and analysis, and the development and implementation of Total Maximum Daily Loads (TMDLs) for the Pacific Northwest and Inland Northwestern United States. David Stasney, the principal and Hydrogeologist for DVS Environmental, has over three years' experience working for the Idaho DEQ, where he was responsible for watershed planning, restoration, and implementation for EPA approved TMDLs for northern Idaho, western Montana, and northeast Washington. He also was involved in NPDES permit reviews, technical oversight of water quality monitoring projects, technical review of FERC dam relicensing for the Clark Fork and Spokane Rivers, and coordinating public outreach and education. DVS Environmental will be the technical lead for projects or services related to lake water quality monitoring, NPDES permitting, TMDL technical editing, and information and education. DVS will also be involved in most other aspects of TMDL development and water resources monitoring.

Further information on each firm is provided in the Offeror Qualifications section that follows. At the request of the contracting agency the Watershed Consulting team can be expanded for a particular task order to include other firms with specialized expertise.

Figure 1 summarizes company roles and responsibilities.

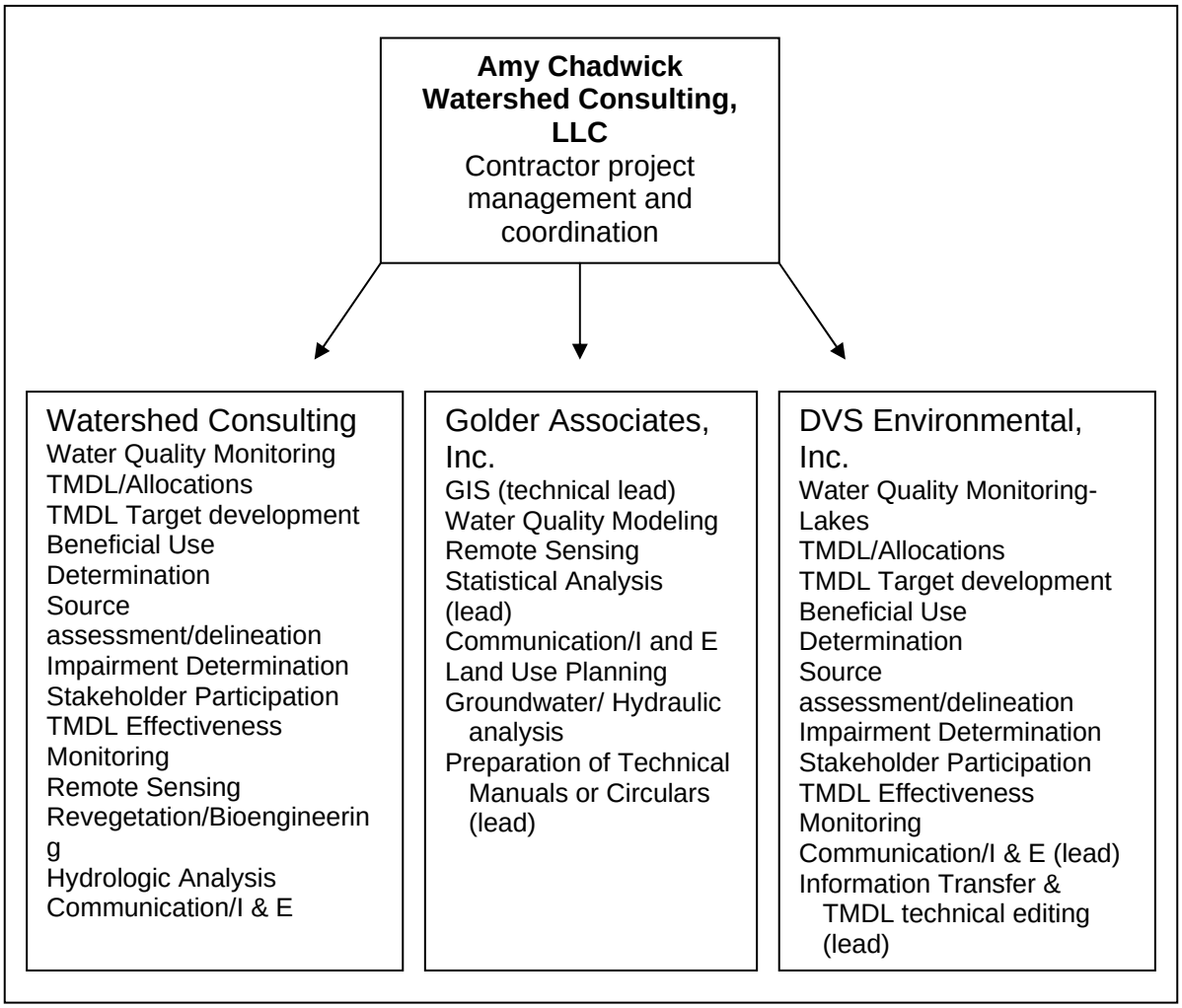

Figure 1. Summary of Company Roles and Responsibilities.

Section 3. Scope of Project

This section addresses each section and subsection related to Scope of Project issues, providing compliance statements or explanation where applicable.

3.0. Background

SPB05-894P, **Section 3.0**, including all subsections, Watershed Consulting, LLC understands and will comply.

3.1 Engineering Access

Watershed Consulting has included a Professional Engineer (PE) and an Engineer in Training (EIT) in the service team to provide professional engineering services where necessary. The principal hydrologist at Watershed Consulting has several years of experience surveying for stream restoration design, but Watershed Consulting will employ a professional surveyor from a local land surveying company if needed.

3.2 Project Selection

SPB05-894P, **Section 3.2**, including all subsections, Watershed Consulting, LLC understands and will comply.

3.3 Selecting a Contractor

SPB05-894P, **Section 3.3**, including all subsections, Watershed Consulting, LLC understands and will comply.

3.4 Contractor Responsibilities

SPB05-894P, **Section 3.4**, including all subsections, Watershed Consulting, LLC understands and will comply.

3.5 Service Categories

This section provides a summary of the service categories offered by the Watershed Consulting team and detail of the team's experience applicable to each service category.

The Watershed Consulting team has the experience and skills to provide many of the services listed in this RFP. Table 1 (included in the RFP SPB05-894P as Appendix C: Identification of Services) lists the services for which the Watershed Consulting team is competing under this RFP.

Table 1. Summary of services offered by the Watershed Consulting team.

SERVICES MATRIX	Yes	No
Water Quality Monitoring – Fixed Station and Probabilistic Design	X	
Water Quality Monitoring – Lakes and Streams	X	
Water Quality Monitoring – Reference Sites	X	
TMDL Targets	X	
TMDL Source Assessment/Delineation	X	
TMDL Load Allocations	X	
Total Maximum Daily Loads	X	
Stakeholder Participation	X	
TMDL Effectiveness Monitoring	X	
Geographic Information Systems (GIS) Services	X	
Remote Sensing	X	
Water Quality Modeling	X	
Statistical Analysis	X	
Analytical Laboratory Services		X
DEQ Electronic Data/Information Technical Assistance		X
Heavy Equipment Operators		X
Revegetation Services	X	
Watershed Coordination		X
Communication/Educational Services – Information & Education	X	
Communication/Educational Services – Contract Administration		X
Communication/Educational Services – Information Transfer& TMDL Technical Editing	X	
Land Use Planning Services	X	
Preparation of Technical Manuals or Circulars	X	

The experience and expertise of the Watershed Consulting team is described below under each service area heading. Project References are included in subsection 4.1.1, and tables summarizing project experience and staff qualifications relevant to each service area are included in Section 4.2.

3.5.1 Water Quality Monitoring – Fixed Station and Probabilistic Design

The Watershed Consulting team includes eight staff from all firms in the team experienced with water quality monitoring and monitoring design.

Watershed Consulting has over seven years of experience monitoring water quality in east-central and western Montana at monitoring sites established for a variety of projects. Our bioassessment experience includes sampling of aquatic macroinvertebrates, periphyton, and chlorophyll a, as well as fish population surveys. We have over seven years experience assessing stream geomorphology and floodplain and watershed characteristics using remote sensing. We design monitoring schemes for water quality in cooperation with contracting agencies and other stakeholders to avoid duplication of efforts and insure water quality monitoring designs consider location of existing data and monitoring sites, data gaps and data needs, and landscape and land management characteristics affecting water quality. We often make use of existing USGS gauge information, and have highly qualified staff for collecting accurate flow measurements as part of water quality monitoring. Watershed Consulting has industry standard flow meters and meters for on-site water quality measurements, including Hydrolab and PSI multimeters.

Watershed Consulting is currently involved with TMDL projects in five watersheds throughout Montana conducting review of existing water quality data, water quality monitoring design, and water quality monitoring. In addition, Watershed Consulting has installed staff gauges and has been monitoring water quality and stream flow at fixed stations on the Stillwater State Forest for seven years.

DVS Environmental has worked with diverse stakeholder groups and private clients to develop detailed scopes of work and quality assurance project plans (QAPPs) in accordance with EPA standards for watershed restoration and conservation projects specific to land use planning and the development of Total Maximum Daily Loads (TMDLs). DVS regularly conducts metals and nutrient sampling in surface and ground water, and has experience with all aspects of water quality sampling for non-point source pollution. DVS also has experience in point-source and urban water quality monitoring. David Stasney, the principal of DVS, has experience developing and reviewing EPA National Pollutant Discharge Elimination System (NPDES) permits for the State of Idaho to ensure compliance with state and national water quality standards, including scientific evaluation of toxic effects on aquatic biota and human health. He has also worked on mixing zone analyses for industrial and municipal point source discharges, and has served on technical advisory committees overseeing water quality and land management projects in Idaho, Montana, and Washington. Details of project experience are included in Section 4.1.

Golder Associates has extensive water quality monitoring and probabilistic design capabilities,
As an example, Golder Associates has been the primary contractor for the water quality component of FERC relicensing for the five Avista dams on the Spokane River and Lake Coeur d'Alene, which included monitoring statistical design and development of a CE-QUAL-W2 model for Coeur d'Alene Lake and the Spokane River. Golder has also conducted extensive Total Dissolved Gas (TDG) studies for lakes throughout northern Idaho and Eastern Washington. In addition, Golder developed technical procedures and specifications for installation, development and monitoring of 14 stream gages in the Methow Basin in Washington. Focus was on tributary drainages to the Methow and their relationship to irrigation diversions and mainstem gages maintained by the USGS.

3.5.2 Water Quality Monitoring – Lakes and Streams

Watershed Consulting has seven years of experience in assessing the condition of stream reaches and sampling water quality within designated reaches. Stream reach assessments have been a focus of our work since the founding of Watershed Consulting in 1994 and we specialize in integrated assessments, combining geomorphic, biologic and physio-chemical variables. We are experienced in a wide variety of methodologies of stream assessment, including HGM, PFC, RWRP methods, Rosgen classification and departure analysis, USFS R1/R4, and MDOT assessment for riverine wetlands, and have developed EPA-approved QAPP documents for monitoring projects. We have the capabilities and expertise to conduct biological sampling, including fisheries surveys. We often sample water quality in conjunction with habitat assessment for determining the influence of impaired stream reaches on overall water quality. Watershed Consulting regularly monitors surface water quality for TMDL assessments and other water quality projects for the DNRC and private clients. Watershed Consulting has also conducted monitoring for several Environmental Analyses and Biological Assessments in western and eastern Montana. Our watershed assessments often involve use of aerial photo interpretation and GIS or CAD images derived from existing coverages and Total Station surveys we conduct for floodplain characterization.

DVS Environmental conducts physical, chemical, and biological water quality sampling and related field work for TMDL assessments and other water resource projects. Experience in water quality projects also includes development of water quality sampling and analysis plans and collection of hydrology, fisheries, macroinvertebrates, and fish habitat data. Golder Associates has a large water resources group, with a broad experience base in water quality monitoring for streams and lakes. The Project Hydrologist for Golder Associates has experience monitoring water quality in Washington and northern Idaho, as well as in western and east-central Montana. Golder has recently been involved with numerous lake monitoring projects in northern Idaho and Eastern Washington.

3.5.3 Water Quality Monitoring – Reference Sites

Reference sites are often used for comparison of conditions on 303(d) listed waterbodies to "natural condition" or "reference condition," to determine impairment for pollutants for which no numeric targets are defined and have specific narrative standards. "Reference condition" is assumed to reflect conditions under which a waterbody is capable of supporting its present and future beneficial uses, when all reasonable land, soil, and water conservation practices have been applied. Reference sites therefore also provide an endpoint for TMDL allocation and restoration goals.

Watershed Consulting has ten years of experience conducting assessments related to identifying reference sites, using a variety of stream condition and geomorphic assessments. Methods employed by Watershed Consulting include HGM assessment for wetlands and riparian systems, Rosgen level 1 through 3 classification and departure analysis, NRCS stream reach assessment form, RWRP stream and wetland assessment forms, MDEQ Stream Reach Assessment Form (SRAF), MDT wetland functional assessment, and remote sensing using color normal or infrared aerial photography for preliminary stream condition assessments. Watershed Consulting has identified and monitored reference reaches for TMDL projects in northwestern and southwestern Montana, and is currently involved in remote sensing to conduct preliminary reach conditions assessments for two TMDL projects in east-central Montana. Preliminary condition assessments are used to identify reference reaches and to design water quality monitoring and other field assessments based on reach condition and landscape-scale characteristics. Water quality monitoring and other field-based assessments comparing conditions in a waterbody to reference conditions are conducted during similar hydrologic or environmental conditions for both streams or reaches. Watershed Consulting recognizes that there are inherent uncertainties in comparing separate streams or upstream/downstream reaches, and therefore develops water quality monitoring plans in cooperation with the contracting agency to ensure uncertainties are addressed and are recognized by the client.

3.5.4 TMDL Targets

Watershed consulting has seven years of water quality investigations conducted on a scope sufficient to define water quality trends and impairment at a watershed scale. TMDL targets are generally based on numeric water quality standards, literature values from studies in similar conditions, or "natural" conditions, defined as conditions supporting current or future beneficial uses when all reasonable soil, water, and land conservation practices are in place. In some cases, water quality modeling is used to model "natural" conditions. Our water quality monitoring plans are designed to define natural levels of pollutants to the extent possible and determine departure from those natural levels. We are completely aware of the necessity for thorough, high-quality water quality research, and we realize that setting TMDL targets must be done with a thorough understanding of the water quality trends on a reach or in a watershed.

Watershed Consulting has developed TMDL targets for the Ruby River TMDL Planning Area (TPA) in southwest Montana, using numeric water quality standards for metals, and a combination of published literature values and reference condition for pollutants with narrative water quality standards. Watershed Consulting maintained regular communication with the MDEQ project manager during the development of TMDL targets. Watershed Consulting and Golder Associates are conducting water quality modeling to derive TMDL targets two basins in Montana in 2004.

DVS Environmental regularly conducts water quality and analysis for TMDL projects. While at Idaho DEQ, the principal of DVS Environmental was responsible for all phases of TMDL development and implementation of EPA approved TMDLs for northern Idaho, northeast Washington, and western Montana.

3.5.5 TMDL Source Assessment/Delineation

Watershed Consulting has conducted water quality monitoring related to source delineation since 1994. We have conducted water quality sampling and flow monitoring using USGS methods in the Stillwater State Forest for the DNRC for the past five years, to help determine the relative impacts of land use (including logging and road building), hillslope erosion, and bank erosion, on water quality. We have completed work for the Nature Conservancy to set-up and maintain water quality stations near Whitefish to identify and isolate sources of water quality degradation in the upper watershed.

Recent work in TMDL Source Assessment and Delineation for the Ruby watershed in southwest Montana has included remote assessment for stream reach delineation and condition, extensive monitoring for water quality, channel morphological characteristics, stream condition assessments, and sediment source rapid inventory. Data collected in the assessment have been entered into STORET-compatible database files and additional spreadsheets, as well as in attribute tables related to landscape sediment sources and a stream reach layer based on the NHD dataset. Source Assessment and Delineation also entailed review of existing water quality and stream condition data, review of MDEQ SCD-BUD files, collecting land use information from landowners and cooperating agencies, modeling of water and sediment runoff potential of listed subbasins, and remote assessment using GIS and existing aerial photos. Major causes of impairment and major sources of pollutants are identified after review of all data and information related to natural, point, and non-point sources. Where possible within the scope of the project, sources are quantified to guide TMDL development and source load allocations. Monitoring and restoration alternatives and recommendations are being developed to provide cost-effective options for watershed restoration and scientifically sound effectiveness monitoring. Watershed Consulting has maintained regular communication with the project manager and other monitoring personnel at MDEQ during every phase of this project.

Currently Watershed Consulting is initiating TMDL source assessment and delineation work in three other TMDL project basins in Montana, which entails review of existing data and remote sensing. Watershed Consulting is coordinating collection of new color-normal and infrared aerial images, which will be used along with existing GIS layers to conduct preliminary source assessments and impairment determinations. Golder Associates is also working on these projects, on tasks related to GIS mapping and watershed characterization.

DVS Environmental and Golder Associates have a wide range of experience in investigative monitoring and statistical analysis for TMDL Source Assessment/Delineation and other watershed assessments. Golder and DVS have both completed watershed assessment work for the Tri-State Water Quality Council and have been involved in a variety of water quality monitoring tasks in northern Idaho watersheds. DVS Environmental regularly conducts water quality and analysis for TMDL projects. While at Idaho DEQ, the principal of DVS Environmental was responsible for all phases of TMDL development and implementation of TMDLs for northern Idaho, northeast Washington, and western Montana.

3.5.6 TMDL Load Allocations

As part of the Ruby Watershed TMDL, Watershed Consulting has developed numeric and performance-based allocations for nutrients, sediment, and metals for impaired waterbodies in the Ruby TPA. Allocations are currently under revision. Watershed Consulting has maintained regular contact with MDEQ while developing and revising allocations. Load allocations are based on quantification of pollutant source characterization and comparison to natural background levels, where possible. Load allocations are presented as estimates of pollutant loading attributable to different sources of pollution, and are expressed both as percent reduction required to achieve the maximum allowable load and as performance-based allocations related to implementation of BMPs and other management and restoration activities.

DVS Environmental regularly conducts water quality and analysis for TMDL projects. While at Idaho DEQ, the principal of DVS Environmental was responsible for all phases of TMDL development. DVS has been involved in TMDL technical review, including review of source characterization, TMDLs, and load allocations.

3.5.7 Total Maximum Daily Loads

All of the firms in the Watershed Consulting team have extensive experience conducting monitoring and performing watershed analyses applicable to TMDL development. Watershed Consulting has recently developed TMDLs for nutrients, sediment, and metals for listed waterbodies in the Ruby River watershed TPA.

TMDLs include consideration of waste load allocations to point sources, load allocations to non-point sources, natural background sources, and a margin of safety to ensure water quality goals will support beneficial uses. Preliminary TMDLs are currently under revision, for which Watershed Consulting has cooperated closely with MDEQ.

DVS Environmental regularly conducts water quality and analysis for TMDL projects. While at Idaho DEQ, David Stasney, the principal of DVS Environmental, was responsible for all phases of TMDL development. DVS has been involved in TMDL technical review, including review of source characterization, TMDLs, and load allocations. David Stasney also co-authored the nutrients TMDL for Pend'Oreille Lake.

3.5.8 Stakeholder Participation

Watershed Consulting encourages stakeholder participation as part of a long-term approach to watershed restoration. Facilitating communication among stakeholders and fostering a sense of project ownership for landowners are two critical components of a successful restoration project. Watershed Consulting generally exceeds contract requirements for stakeholder participation and often donates time and services as cost match, for project initiation meetings with agencies and coordination meetings with watershed groups, reconnaissance, and presentation of results or related information.

On current TMDL projects, Watershed Consulting is responsible for acquiring access permission from private landowners for conducting TMDL-related monitoring. Watershed Consulting has enjoyed excellent participation from landowners, and has developed positive working relationships with landowners in all watershed assessment projects. Watershed Consulting emphasizes landowner feedback for TMDL recommendations, incorporating stakeholder feedback in TMDL restoration recommendations, where feasible to meet beneficial use requirements. Watershed Consulting obtains landowner feedback by conducting interviews at the time of monitoring, attending watershed group meetings, developing and mailing surveys pertinent to management concerns the specific area, and interviewing key players in the watershed to learn about issues and contacts. Watershed Consulting is working closely with landowners to design and implement restoration projects that improve economic operations for the landowner while restoring water resources.

Donna DeFrancesco, the project manager for Golder Associates, has extensive experience facilitating workshops for landowners and watershed groups, and is regularly the liaison for Golder and stakeholder groups in watershed assessment projects. Golder has experience facilitating communication for city and county governments in urban projects, as well as leading communication among landowners and State government for rural watersheds. Donna has a positive experience working with landowners and grassroots organizations in six basins in western and east-central Montana.

Many of the impaired waters in Montana are chronically dewatered or listed for hydromodification, yet increasing in-stream flow is one of the most difficult restoration challenges, due to the political environment surrounding western water rights. Watershed Consulting has been working with Montana Water Trust to identify opportunities to facilitate leasing of in-stream water, while protecting landowner water rights. Montana Water Trust is a non-political organization that strives to find solutions that benefit landowners as well as water resources, a goal that matches with the philosophy of the Watershed Consulting team. Montana Water Trust has personnel trained in facilitating workshops, and has agreed to work with Watershed Consulting in dewatered systems to train irrigators about improved irrigation technology and presenting options for in-stream leasing that will not jeopardize their water rights. Montana FWP, Trout Unlimited, and Montana Water Trust all offer opportunities for leasing in-stream water rights.

3.5.9 TMDL Effectiveness Monitoring

Watershed Consulting has over nine years of experience in effectiveness monitoring. We regularly recommend and implement monitoring plans to quantify water quality and stream channel condition before and after restoration or management changes aimed at restoring aquatic systems. Effectiveness monitoring is an important component of watershed restoration through the TMDL program, to ensure recommendations are adequate to achieve water quality targets and beneficial use support. Watershed Consulting incorporates effectiveness monitoring as part of adaptive management plans for TMDL implementation, which include revising restoration strategies if initial strategies are not achieving TMDL goals. Monitoring designs include collecting physical, chemical, and biological data, often including monitoring at high and low flow for flow-

dependent variables and monitoring at fixed stations using consistent methods over a period of several years. Watershed Consulting strives to design monitoring plans that will provide necessary data to determine effectiveness of TMDL plan implementation, while avoiding collecting unnecessary data or incurring unnecessary monitoring costs. Watershed Consulting maintains regular communication with the client in all phases of designing, implementing, and reporting for effectiveness monitoring.

3.5.10 GIS Services

The Watershed Consulting team has extensive capabilities in GIS services. All firms have knowledge of GIS and experience conducting GIS-based analysis for source assessment and TMDL development. Golder Associates has a full-service GIS department, and will be providing the technical lead for GIS Services. The GeoGraphic Information Services (GGIS) group of Golder Associates has over 50 full-time employees which provides consulting and services involving Geographic Information Systems (GIS), Remote Sensing and Computer Assisted Drafting/Design (CAD). Golder has been involved in GIS since its inception, and was recently presented with an Award of Excellance from ESRI. Over 250 projects have been completed for customers in the United States, Canada, and other countries, including oil and gas exploration/production companies, pipeline companies, mining companies, utility companies, forestry companies, and agricultural processing companies, as well as government agencies, U.N. organizations, and international financial institutions.

Golder Associates uses proven, industry-standard software tools, selected for their reliability, high quality and compatibility with other software. Depending on client requirements, project work can involve one or more of such software packages as:

- GIS (ARC/INFO with TIN and GRID extensions, PAMAP, MAPS-3D, GeoMedia, EVS, and MicroStation with GeoGraphics, Descartes, and GeoCoordinator extensions)
- Desktop mapping (ArcView with Spatial Analyst, 3D Analyst, and Network Analyst extensions, and MapInfo with VerticalMapper and BoreholeMapper extensions)
- Image analysis (PCI EASI/PACE, including terrain fly-through/simulation software)
- Drafting, design and graphics (AutoCAD, ArcCAD, CorelDraw, PhotoShop, Visio)
- Database management (ORACLE7, Visual FoxPro, Microsoft Access, Microsoft SQL Server, and dBASE)
- Programming and applications development (MapBasic, Avenue, Visual C/C++, VisualBasic, Application Visualization System, Visual Interdev, Active Server Pages, VBScripts, JScript, Java and other products)

Golder Associates has a variety of certifications and qualifications that include:

- RADARSAT International Data Distributor of LANDSAT and IRS satellite data
- ESRI Business Partner
- PCI Pacific PAMAP value-added reseller and software developer
- Compusearch Micromarketing Data and Systems Data Re-Seller
- Qualified contractor for B.C. Ministry of Forests
- Qualified DND contractor for Vector Product Format (VPF) map production worldwide

GIS Projects

Golder Associates has provided GIS maps for the Ruby Watershed TMDL phases I and II, including mapping water quality modeling results in a format compatible with GIS, and developing a completely portable GIS project dynamically linked to a database containing physical, chemical, and biological data. A series of maps was developed for each phase of the TMDL, and included mapping of landscape features, water quality status, endangered species distribution, land use features, reach condition, water quality sampling sites, water pollutant concentrations, and modeling results. An example map for this project is included in Appendix A, Methods. Regular communication between Watershed Consulting and Golder Associates has allowed GIS mapping and GIS-based source analysis to be conducted effectively for TMDL development.

Golder is also providing technical support for GIS services for Watershed Consulting on two other TMDL projects in Montana in 2004.

Other examples of some of Golder's GIS and Remote Sensing Projects include:

Pipeline Environmental Sensitivity and
Emergency Response Plan
Montana/Idaho, Washington, USA
Golder Associates completed an environmental sensitivity evaluation for the Yellowstone Pipe Line Company, as input to an Emergency Response Plan for a 640-mile (1000-km) oil pipeline in the northern United States. The results of the evaluation, which incorporates wildlife habitat, land use, aquatics, hydrology, geotechnical, socio-economic, archaeological/historical, vegetation and soils information for 50,000 square miles in a GIS, was used in a state-of-the-art Emergency Response Plan for the pipeline. The Plan was provided to the client in both print and digital form, so that the spatial database and response procedures can be easily accessed.

Diamond Mine Site Baseline Mapping
Northwest Territories, Canada
As part of an environmental assessment for a proposed diamond mine in the Northwest Territories, a baseline vegetation and land cover type classification from Landsat Thematic Mapper satellite data and ground survey data was carried out using image analysis and Digital Terrain Models (DTMs). Eight land cover classes were identified from the satellite data, modified using field data collected by Golder Associates' vegetation and terrain specialists, and final maps output with classification accuracies of 82%. The regional overview provided by the satellite data, and the detailed local area assessment provided a rapid, up-to-date data source for the field surveys and environmental evaluation.

Mine Impact Assessment
United States
In this project, Golder Associates used a GIS to store, display and maintain the spatial information on aquatics, wildlife, hydrology, soils, archaeology and other aspects of a large, multi-year environmental impact assessment for a significant mine development in the southern United States for Chino Mines Inc.

3.5.11 Remote Sensing

Watershed Consulting has conducted remote sensing for Phase I assessments on the Ashley Creek and Ruby River watersheds as part of watershed characterization and pollutant source assessment. Watershed Consulting is also involved in remote sensing for TMDL projects in four other watersheds in Montana, all in initial stages as of May 2004. Remote sensing services include:

- Review of existing GIS layers and aerial photos for Phase 1 assessment
- Tabular summary of measured and occularly estimated variables related to TMDL source assessment and impairment determination
- Coordinating collection of new color-normal thermal infrared and color infrared images
- Comparison of historic and recent aerial images
- "Heads up" digitizing in ArcGIS 8.3
- Forward-Looking Infrared (FLIR) temperature assessments

Remote sensing is the use of image data acquired from airborne and satellite sensors to observe and record features on the earth's surface. At Golder Associates, remotely sensed data are used cost-effectively for most mapping and monitoring applications in conjunction with GIS services. Remote sensing services include:

- Acquisition of satellite data, air photos, airborne data
- Image processing (geocorrection, orthorectification, radiometric enhancement, etc.)
- Image analysis (classification, data fusion, change detection)
- Output products (image maps, thematic maps, perspective views, "fly-throughs")

FLIR assessment is a useful innovative approach to development of temperature TMDLs. The role of cold-water habitats, groundwater influences and temperature profiles across the entire watershed can be sampled with Forward Looking Infrared (FLIR) temperature analysis. FLIR is an accepted method for modeling stream temperature, and is becoming accepted as a standard methodology for developing temperature TMDLs in Oregon and Washington. Watershed Consulting and Golder are conducting Forward-Looking Infrared (FLIR) temperature assessments and temperature modeling in two watersheds in western and southwestern Montana. The FLIR methodology is described below.

FLIR: Modeling Stream Temperature for TMDL Development

FLIR has been demonstrated as a reliable, cost-effective, and accessible technology for monitoring and evaluating stream temperatures from the scale of watersheds to individual habitats. Traditional methods for monitoring stream temperatures have relied on in-stream temperature loggers to gather data. Temperature loggers provide temporally continuous data, but provide little insight into the spatial variability in temperatures. Remote sensing using FLIR provides a method to map stream temperatures across entire stream networks at a point in time. FLIR technology has proven to be a highly portable and cost-effective method to collect very detailed data over large areas in very little time. The combination of temporally and spatially continuous data provides very powerful tools for understanding the dynamics of stream temperature hierarchically across multiple scales (pools → reaches → streams → watersheds). Current research has identified cool versus warm streams within a watershed, cool reaches within a stream, and cool habitats within a reach.

Temperature problems often extend for hundreds of river miles that traverse multiple land uses. Identification of source (heating) areas, as well as areas that induce stream cooling, requires spatially continuous data. FLIR stream temperature analysis was developed in part for this purpose. To date no other data collection platform can deliver spatial temperature data comparable to the resolution and feasibility offered by FLIR stream temperature analysis.

Absolute maximum summertime stream temperatures may vary by several degrees annually, however, the longitudinal temperature patterns of heating and cooling remain spatially fixed. Simply stated, an area of cool thermal refugia will likely persist year after year (barring significant landscape or channel changes). Similarly, source areas are likely areas of heating year after year. By mapping the extent of source (heating) and cool thermal refugia areas in the watershed, a baseline for long-term recovery tracking will be established. It is expected that FLIR "flights" will be repeated in the future (i.e. on a ten-year return period). This proposed FLIR effort would provide the baseline measures for recovery tracking. Additional data collection should accompany FLIR data collection. Specifically, flow and temperature measurements are performed in conjunction with the FLIR data collection to calibrate FLIR results and provide data for related temperature modeling.

Remote Sensing for TMDL Phase 1 Analysis

Watershed Consulting is currently conducting other remote sensing projects for TMDLs in Montana, entailing summarizing existing information, developing GIS base maps and performing initial stream reach delineation, and coordinating collection of new high-resolution aerial images to provide a foundation for aerial Phase 1 TMDL assessment. New images are delivered as GIS-compatible .tif files and superimposed on the existing DOQQ aerial photo layer, then new images are compared to the older photo layer to document significant changes and strengthen source assessment and impairment determination. All remote assessments include ground-truthing to increase the accuracy of aerial assessments. The existing NHD stream layer is modified to reflect the current stream path, stream reach breaks, and stream condition. Landscape, land use, and stream corridor-specific variables measured in the aerial assessment are included as attributes of the revised stream layer, summarized as tabular data in Excel, or digitized as new polygon shapefiles.

Watershed Consulting subcontracts aerial image collection to IRIS, a small aerial photography company specializing in high-quality infrared image collection. IRIS has the capability to collect color-normal video and still images, as well as FLIR and color infrared images. IRIS has conducted FLIR flights on several TMDL projects for Idaho and Oregon DEQ, and is conducting flights for TMDL projects in at least four watersheds in Montana in 2004.

3.5.12 Water Quality Modeling

Golder Associates will provide the technical lead in this area. Golder Associates has over ten years of experience with a wide variety of water quality modeling methods and applications, as is outlined below and in personnel resumes.

Hydrologic/Hydraulic Modeling

Golder provides specialized capabilities and project experience in the areas of hydrologic and hydraulic modeling.

Golder is experienced with the following hydraulic modeling tools:

- HSPF;
- HEC-1, HEC-HMS;
- HEC-2, HEC-RAS;
- SEDCAD;
- XP-SWMM;
- Mike-SHE and Mike-11;
- Flowmaster and HE;
- Chan;
- Stella;
- CAD/GIS;
- IFIM and related and 2-D and 3-D hydraulic models
- PHABSIM.

Water Quality Modeling
Golder is currently cooperating with Watershed Consulting on TMDL projects using the AGWA and SNTEMP water quality models. Golder also has experience in SWAT and QUAL2K water quality modeling.

Related Services: Instream-flow determinations
Golder Associates (Golder) makes use of various analytical tools for addressing instream flow needs to analyze the wide range of potential effects water management may have on riverine environments. The instream flow requirements for fish is often particularly important. One of the more sophisticated methods used to address fish habitat issues is the Instream Flow Incremental Methodology (IFIM). This method involves use of computer models to compare predicted habitat conditions in the regulated river system with the habitat preferences of the fish species of interest. An interdisciplinary approach and application of powerful predictive tools such as IFIM have proved to be very useful in achieving integrated management of water resources. Golder Associates has the flexibility and expertise to use new, improved instream flow technologies including 2-D and 3-D hydraulic models.

3.5.13 Statistical Analysis
Golder associates will provide the technical lead for this service area. Golder has over 40 years of experience in statistical analysis, in a wide variety of applications. The highly qualified statisticians and biometricians are able to complete any statistical analysis needed for projects performed under this contract. In addition, Golder has the hardware and software resources to perform the most suitable analysis and present results in a high quality product.

3.5.14 Analytical Laboratory Services
The Watershed Consulting team is not offering this service.

Watershed Consulting does subcontract Intermountain Labs and Energy Labs to conduct water quality analysis, and Rhithron Associates and Hannaea to analyze bioindicator samples. Watershed Consulting coordinates with MDEQ and water quality analysis subcontractors to ensure water quality data are reported to MDEQ in a STORET-compatible format.

3.5.15 DEQ Electronic Data/Information Technical Assistance
The Watershed Consulting team is not offering this service.

Watershed Consulting does coordinate reporting with MDEQ and water quality analysis subcontractors to report water quality data in STORET SIM compatible format. Golder Associates has extensive capabilities in database development and design and instructional use.

3.5.16 Heavy Equipment Operators
The Watershed Consulting team is not offering this service.

3.5.17 Revegetation Services

Watershed Consulting emphasizes an holistic approach to watershed restoration, focusing on natural resource management and cooperation among stakeholders as an approach to long-term restoration. Widespread revegetation for streambank or floodplain restoration is often cost-prohibitive, and is of limited use unless management considerations are addressed. In many cases in rangeland watersheds, vegetation can be restored through grazing management plans incorporating a combination of techniques including riding and riparian monitoring, rest-rotation or deferred rotation grazing, off-site water, riparian fencing, and water gaps.

However, in some cases, revegetation and biomonitoring is a useful and cost-effective part of watershed restoration. Revegetation is often desirable in the following cases:

1. Disturbed areas from stream crossing or irrigation diversion redesign
2. Mine sites
3. Burned area restoration for erosion control
4. Localized areas of very high bank erosion where natural conditions no longer allow natural regeneration of riparian vegetation
5. Channels incised from past overuse with the potential for restoration of natural channel form and water table levels

Personnel from Watershed Consulting, DVS Environmental, and Golder Associates have several years of revegetation and stream restoration experience. The Restoration Ecologist at Watershed Consulting operates a small nursery for riparian and forest species used in revegetation projects, and has associations with several native growers to provide additional materials. Bioengineering techniques employed by Watershed Consulting often use native materials procured on-site, such as brush thinned from neighboring forest stands, native wetland sod, or mature riparian transplants. A summary of selected bioengineering techniques is provided in Appendix A, Methods.

Watershed Consulting has the expertise, experienced laborers, and small equipment for revegetation services. For larger revegetation and bioengineering projects, Watershed Consulting often subcontracts heavy equipment operators with specific experience in native material bank stabilization, stream restoration, fish habitat improvement, riparian transplanting and all other facets of engineered construction projects. The heavy equipment subcontractors employed by Watershed Consulting have worked on a wide variety of stream and wetland restoration projects throughout Montana, and are well-established in their field of expertise:

Rowe Excavation, Dillon, MT	17 yrs Experience
John Fitchett, Heron, MT	10 yrs Experience
T&L Construction, Wolf Creek, MT	20 years Experience

3.5.18 Watershed Coordination

The Watershed Consulting team is not offering full watershed coordination services, to avoid conflict of interest concerns. However, firms on the Watershed Consulting team do maintain regular communication with watershed coordinators and group members, and often attend watershed meetings or provides project tours as part of watershed restoration efforts.

3.5.19 Communication/Educational Services – Information and Education

Golder Associates will be providing the technical lead for this service. The members of the Watershed Consulting team have the combined experience to provide educational services in the form of workshops or educational brochures in all aspects of land management related to non-point source pollution. Golder Associates has strong capabilities in document publication and recularly facilitates workshops for watershed groups. The other firms in the Watershed Consulting team also have experience related to I and E services. While at IDEQ, David Stasney, the principal of DVS Environmental, planned and facilitated various public meetings and served as public education outreach coordinator for the Coeur d'Alene regional office of DEQ. DVS has been subcontracted to plan and facilitate public meetings, develop and implement various projects to educate the public about environmental and water quality issues including public presentations, display of information on the World Wide Web, and educational materials for print and public distribution. David Stasney is also co-founder and Director of Community Outreach for Creative Intelligence Media, and as such has been

responsible for designing community networking and information exchange systems. Watershed Consulting regularly gives presentations about watershed management and related topics to watershed groups as part our watershed restoration efforts.

One of the largest issues related to non-point source pollution is hydromodification, which is not considered a pollutant for which a TMDL can be developed. However, dewatering is often the limiting factor for listed streams in the West. Watershed Consulting is cooperating with Montana Water Trust to provide workshops and other educational materials to landowner groups about options for leasing in-stream water rights, while protecting landowner water rights and improving irrigation systems.

3.5.20 Communication/Educational Services – Contract Administration

The Watershed Consulting team is not offering this service, but does help clients document and track matching funds provided by Watershed Consulting, assists clients in developing scopes of work for projects, and maintains records of project budgets in which the team is involved.

3.5.21 Communication/Educational Services – Information Transfer &TMDL Technical Editing

DVS Environmental will provide the technical lead for this service. The principal of DVS Environmental has experience as public education outreach coordinator for the Coeur d'Alene regional office of DEQ. While at IDEQ, David Stasney drafted TMDLs and conducted TMDL technical editing. DVS Environmental provides information transfer services including public presentations, display of information on the World Wide Web, and educational materials for print and public distribution.

Golder Associates has organized and sponsored conferences, and has produced numerous pamphlets, brochures, and guidebooks about natural resource management related to nonpoint source pollution assessments. Golder has developed educational flyers on water quality and watershed improvement activities. Golder offers complete multimedia and publishing services with a complete in house graphics design and production services group. Golder offers complete multimedia and publishing services. Personnel from all cooperating firms on the Watershed Consulting team have experience in TMDL document writing and editing, and publication and review of other scientific documents.

3.5.22 Land Use Planning Services

Golder Associates will provide the technical lead for Land use Planning Services. Golder has a wide variety of skills applicable to land use planning, including FEMA floodplain assessment, irrigation design, river corridor management, and groundwater use planning. Golder completed the Western Snohomish County Groundwater Management Plan on behalf of the Snohomish County Department of Planning and Development Services. Watershed Consulting has several years of experience working with landowners to improve riparian grazing management and designing forest management plans. Watershed has a working association with a ranch management and rangeland restoration company in Montana, and can subcontract services for crop recommendations and upland range management recommendations. Watershed Consulting has conducted several soil surveys and road inventories for the State of Montana, which include management recommendations. Other land use planning experience is summarized below.

FEMA/NFIP

Golder provides specialized capabilities and project experience in the areas of regulatory interpretation of federal and state floodplain management guidelines and floodplain mapping. Golder is also experienced in coordination with FEMA in response to emergency flood events.

We have extensive experience in the interpretation and use of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMS's), Flood insurance Studies (FIS) and the implementation of local National Flood Insurance Programs (NFIP). The FEMA FIRM's are notorious for having issues and problems. Due to the age of some FIS's, significant changes may have occurred to the floodplain features, resulting in maps that no longer represent the current flooding characteristics. Golder's FEMA retailed capabilities include:

- FEMA FIS and FIRM interpretations;
- Base Flood Elevation (BFE) determinations;
- Letter of map Amendment (LOMA) applications/certifications;

- NFIP regulation development, interpretation, and implementation; and
- FEMA emergency response Damage Survey Report (DSR) inspection and funding coordination/management.

Consultants on the Golder staff have performed hundreds of flood determinations and interpretations of NFIP regulations as it relates to development proposals and interpretations of the FEMA FIRM's. Our staff are skilled at understanding how to use FEMA FIS's, and how to recognize where this information may require additional analysis, field investigations, or supplementary input.

Basin Planning/River Corridor Management
Golder has extensive experience in working on natural resources and ecological science projects within Idaho, Montana, Washington. Our efforts in this arena focus our ecological and water resources capabilities towards watershed assessments, management plans, and watershed planning activities. We are currently working on more WRIA watershed planning projects than just about any consultant in the state of Washington. This includes watershed planning for Spokane County on WRIA 54/55 (Spokane and Little Spokane Rivers).

Irrigation and Water Use
Golder associates has experience designing rural and urban water use plans for clients throughout the Northwest. Golder provides expertise in agricultural water systems engineering, hydraulic engineering, and surface and groundwater modeling. Watershed Consulting has a working association with and can subcontract a range management company in Montana that designs efficient, ecologically appropriate, and cost-effective irrigation systems for private ranches. Watershed Consulting also works with Montana Water Trust to provide options for improving irrigation efficiency and funding irrigation improvement projects.

Watershed Planning
Golder is a leading provider of Watershed Planning services in Washington State and is currently participating in watershed planning activities in over 15 basins throughout Washington. These planning and technical services include: water quality, water quantity, habitat, and instream flow. Golder Associates staff recently completed the first accepted Watershed Plan approved by the State of Washington in Washington State. The Plan was developed for the Nisqually watershed and was accepted by Governor Locke and the Nisqually Tribe and Watershed Planning Unit in a ceremony in April 2004.

3.5.23 Preparation of Technical Manual or Circulars
Golder associates offers complete permitting and publishing services, and will provide the technical lead for this service area. Golder Associates has organized and sponsored conferences, and has produced numerous pamphlets, brochures, and guidebooks about natural resource management related to nonpoint source pollution assessments. DVS Environmental develops educational materials related to water resources for print and public distribution. While at IDEQ, David Stasney developed and reviewed EPA National Pollutant Discharge Elimination System (NPDES) permits for the State of Idaho, ensuring compliance with state and national water quality standards. He also participated in scientific review of a Federal Energy Regulatory Commission (FERC) dam relicensing proposal. Watershed Consulting regularly completes water permitting for restoration projects, and is familiar with State permitting requirements.

Section 4. Offeror Qualifications

4.1 Offeror Informational Requirements

4.1.1 References

Project References for Watershed Consulting, LLC
Watershed Consulting has a wide range of project experience, in which we have performed or have used the skills necessary to perform fixed station monitoring, stream reach assessments, identification and monitoring of reference sites, TMDL development and reporting services, and effectiveness monitoring particular to Montana’s surface water resources and TMDL development.

Ruby River TMDL Development
Client: Montana DEQ and Ruby Valley Technical Advisory Committee
Contact: Darrin Kron, Montana DEQ, (406) 444-4765
Watershed Consulting completed the Phase 1 TMDL Assessment for the Ruby Watershed in 2002 and has been conducting monitoring for source assessment and TMDL development in 2003 and 2004. The TMDL analysis includes landscape-scale GIS-based analysis and remote sensing, as well as water quality and biomonitoring and extensive stream assessments and sediment source inventories throughout the watershed. One of the most important components of the Ruby Valley TMDL assessment has been developing relationships with local landowners and other stakeholders. We have developed a questionnaire to incorporate landowner feedback and priorities in developing restoration recommendations, and are in the process of interviewing landowners as part of the restoration design. In addition, we are working closely with BLM and Forest Service personnel to coordinate management recommendations and priorities on private and public lands in order to follow a watershed approach to restoration.
Personnel Involved:
Amy Chadwick, Project Manager
Steve Buckley, Hydrology
Mike Koopal, Fisheries
Donna DeFrancesco, Golder Project Manager
Adam Benton, Water quality modeling
Gary Lau, GIS
Timeline: Ongoing since 2002

Water Quality Monitoring Stillwater State Forest
Client: Montana DNRC
Contact: Marc Vessar, DNRC, Kalispell, MT, (406) 751-2262
For the seventh year in a row, we have been awarded a streamflow measurement and water quality sampling contract with the DNRC for the Stillwater and Swift Creek watersheds in NW Montana. The measurements involve use of standard wading equipment, as well as bridgeboard equipment during high flows.
Personnel involved: Steve Buckley, Hydrologist
Timeline: Ongoing since 1998

Teton River Restoration and Irrigation Diversion Retrofit
Client: Teton River Watershed Council
Contact: Alan Rollo, Coordinator, (406) 727-4437
A geomorphic assessment of the Teton River near Choteau, Montana involved geomorphic mapping of three Holocene fluvial terraces as well as floodplain and channel classification. Each landform was stratified to identify particular riparian successional regimes to better quantify large woody debris recruitment. Bank stability mapping was cross-referenced to each fluvial landform, which characterized the sediment sources associated with each landform. Historical patterns of river migration were analyzed to determine historic and prehistoric meander patterns and channel morphology. The stream assessment identified several destabilizing irrigation diversions, where aggradation was causing significant amounts of gravelly sediment to accumulate requiring dredging every year. Watershed Consulting designed and implemented alternative irrigation diversions which are designed to pass bedload, improve fish habitat, reduce bank erosion and provide for long-term riparian restoration using rootwads, brush bars and willow cuttings.
Personnel involved: Steve Buckley, Project Manager, Geomorphologist
Completion date: April 2001.

Table 2. Additional Client References and Project Experience for Watershed Consulting (Primary contractor on all projects)

Project Name	Project Description	Year	Contact	Status
Montana Agency References				
Ashley Creek Watershed Assessment/ Restoration Plan	This assessment is part of an overall plan to reduce erosion and nutrient delivery to Ashley Creek, a tributary to the Flathead River. Assessment included interpretation of stream corridor condition from aerial photos, followed by ground-truthing to quantify elements of riparian and channel condition. Existing water quality data were summarized to identify data gaps. The project report followed a TMDL format and made recommendations for monitoring to define TMDL targets. Streambank restoration and revegetation projects are underway in 2004.	2001-present	Mark Holston Outreach Coordinator FBC 33 2nd St. East Kalispell, MT (406) 752-0081 Mike Roberts DNRC (406) 444-6641 Ron Steg EPA TMDL Prog. (406) 457-5000	Complete and Ongoing
Engineering Assistance to Montana Conservation Districts	Watershed Consulting has been awarded a contract since 1998 to help MT Conservation Districts with an evaluation of difficult 310 applications. To date, we have evaluated applications ranging from Blue Creek near the Idaho border to the Marias River. Our recommendations resulted in designs friendly to fish passage and conforming to natural river dynamics.	1998-2001	Laurie Zeller DNRC Helena, MT (406) 444-6667	Complete and Ongoing
Black Mountain Post-Fire Restoration	Three landowners in the Cedar Ridge portion of the Black Mountain Fire contracted Watershed Consulting to use FLEP funding for the restoration of their burned forests. Watershed Consulting developed the management plans and practice designs for post-fire restoration in accordance to DNRC recommendations and requirements. The primary objective of our work is to provide the biological and physical elements and conditions necessary to establish and develop a natural, fully functioning forest, while also providing continued human occupancy. We have implemented the plans, and the work is in progress. Restoration efforts include: Reforestation, Erosion Control, Weed Abatement, and Insect Control.	2004	Rob Moler, DNRC; (406) 542-4326	Ongoing

Environmental Assessment (EA) and Environmental Impact Statement (EIS), Coal Creek	Watershed Consulting completed the fisheries chapter component for both an EA and an EIS for proposed salvage timber harvests in the Coal Creek State Forest in 2001 and 2002. The analysis area included portions of the landscape that burned in 2001 during the Moose Fire. The analysis included an evaluation of existing conditions, and direct and indirect effects and cumulative effects of the proposed actions on water quality and fish habitat.	2001	Marc Vessar DNRC Kalispell, MT (406) 751-2262	Complete
East Fork Bull River Stream Corridor Restoration	The goal of the project is to implement a comprehensive re-vegetation effort on the East Fork of the Bull River to establish healthy riparian habitat and in-stream conditions that will aid in the recovery of bull trout. The old-growth cedar forest was illegally harvested in the late1980's. Our goal is to re-establish a riparian shrub/ cedar forest. Biological and physical characteristics of the site make restoration a challenge. Past revegetation efforts have been surprisingly successful, due to innovative techniques and maintenance. Past and future work is possible through a partnership between the U. S. Fish & Wildlife Service, U. S. Forest Service, North American Wetlands Conservation Act, USDA Natural Resources Conservation Service, Green Mountain Conservation District, The Conservation Fund, Avista Corporation, Montana FWP, and the Bull River Watershed Council.	2001-2004	Brad Liermann, Fisheries Biologist, Montana FWP (406) 827-9282 Bob Stein, Landowner: (734) 944-0269; (313) 322-3953	Complete; Monitoring Ongoing
Stream Habitat Inventories for Selected Tributaries of the Blackfoot River, Montana	Watershed Consulting collected stream habitat variables on four tributaries to the Blackfoot River to monitor effectiveness of restoration conditions. This dataset was quantified and compared to previous data where applicable. In addition, Watershed Consulting developed a stage discharge relationship for a fish ladder/irrigation diversion structure pertaining a water lease permit.	1999-2000	Ron Pierce MT FWP (406) 542-5532	Complete

Other References/Selected Project Experience				
Fish, Amphibian and Watershed Feature Inventory & Assessment	Watershed Consulting investigated the fish, amphibian and watershed features of the Blackleaf EIS area. This study was conducted to update existing data and to obtain entirely new data to support the preparation of a future EIS document for oil and gas exploration. Biological, chemical and physical data were assimilated and sensitive areas to disturbance were identified to help guide the alternative process.	2003	Lynn Ricci, Planning and Environmental Coordinator, BLM Lewistown Field Office (406) 538-1922.	Complete
Lower Swift Creek Restoration	Excessive erosion was occurring in the lower reach of Swift Creek, the main tributary to Whitefish Lake. Several landowners were losing property and aggradation was causing a loss of stream competency in the reach. The scenario was complicated both by the presence of bull trout and the deltaic inlet to Whitefish Lake. Watershed Consulting performed a detailed evaluation of the reach, including Total Station Survey and Hydrologic Analysis, Bedload transport, Fish Habitat and Bull Trout spawning surveys. This analysis led to a detailed restoration plan providing for bank stabilization, fish habitat improvement and corridor-wide riparian restoration which was backed by all the landowners and MTFWP. This project was implemented in 1999 and is extremely successful.	1999-2000	Patrick Sullivan (406) 862-0357 or Flathead Conservation District: (406) 752-4220	Complete
Education & Training: Forest Restoration, Severe Disturbance Assessments; Revegetation, Biophysical Assessments	Watershed Consulting takes a unique approach to environmental education and training; most of our training takes place on the ground. For example, we teach families to care for their own forests by introducing them to basic silvicultural techniques, chainsaw use, safety and maintenance, tree falling, light-on-the land skidding and slash management. We are often called to teach biophysical assessment techniques to university courses and local environmental organizations. We have developed assessment criteria and techniques that allow trained students to assess severely disturbed sites and prescribe restoration or revegetation remedies.	2003-2004	Private Clients; References available on request.	Complete

Water Quality Gage Installation and Monitoring: Nature Conservancy, Murdock Property	Installation of water quality monitoring stations for the Nature Conservancy on the Murdock Property north of Whitefish. Installed three stream and crest gages and trained Conservancy employees on water quality sampling. Monitored water quality at gage sites after installation.	2000-2001	Alisa Reich The Nature Conservancy Missoula, MT (406) 721-7887	Complete and Ongoing

Projects grouped by service are listed in table format in section 4.2.

Subcontractor Client References

Golder Associates, Inc.

Project: Nisqually Watershed Planning and Water Quality Assessment
Client: Nisqually Tribe
Contact: George Walter (360) 438-8687

Golder Associates was responsible for managing the full development of the Phase III Watershed Management Plan in WRIA 11 (Nisqually Watershed) under RCW 90.82, developing and implementing a Public Outreach Plan, and conducting supplemental technical assessments addressing instream flow, storage and water quality in the watershed. The Phase III Watershed Management Plan was unanimously approved by the Planning Unit on October 31, 2003.

Based on the first draft of the WRIA 11 Water Quality Monitoring Plan, the Planning Unit determined that the watershed would benefit from a centralized water quality database and a Data Management System to make that data publicly available on the internet. In response to this need, a dynamic web-based spatial database was created for storage and distribution of water quality data.

Project: Pend Oreille Watershed Planning and Water Quality Assessment
Client: Pend Oreille Conservation District
Contact: Don Comins (509) 427-4217

Golder is water quality assessment and watershed planning services to the Planning Unit for the Pend Oreille Watershed. The Planning Unit represents a broad range of interests including government and regulatory agencies, tribes, purveyors, industry, agriculture, community development, environmental groups, river users, technical support agencies and citizens at large.
Golder is currently moving into the second phase of work to complete studies within the basin during 2003/2004. The projects include:

- Improvements in estimates of current and future agricultural, municipal and domestic water use;
- A general hydrogeologic study;
- Quantification of water allocation by sub-basin;
- Streamflow monitoring plan; and,
- Water quality monitoring plan.

Project: Spokane River/Lake Coeur d'Alene FERC relicensing
Client: Avista
Contact: Bruce Howard (509) 495-2941

Avista Utilities operates five dams on the Spokane River between Coeur d'Alene Lake in Idaho and Lake Spokane (Long Lake) in Washington. A new application is due in 2005 to the Federal Energy Regulatory Commission (FERC) before the current license expires in 2007. Golder was retained by Avista to work for the stakeholder group, including Avista, to address water quality components of the relicensing application. The

successful application will meet regulatory water quality 401-certification requirements for both Washington and Idaho State**s**, as well as federal requirements under NEPA
Primary water quality concerns include:

- Total dissolved gases (TDG);
- High streamflow temperature and low dissolved oxygen; and,
- Heavy metals contamination from historical mining activities.

Golder collected TDG data at each of the facilities and conducted gate tests at one of the facilities to examine potential operational approaches to reducing TDG levels. Natural sources of TDG were also identified.
An existing water quality model for temperature and dissolved oxygen for the Spokane River (CE-QUAL-W2) was examined and used to evaluate parameter sensitivity relative to operations and the potential for temperature and DO reductions from changes in operations. A completely new CE-QUAL-W2 model was developed for Coeur d'Alene Lake and coupled with the existing model of the Spokane River.
The diffusion of metals and nutrients from lakebed sediments into the water column was also examined in relation to lake level management using a mass balance approach. The CE-QUAL-W2 model output was used in a separate metals analysis using PHREEQ-C.

Project: Watershed Planning, Methow Basin (WRIA 48)
Client: Okanogan County
Contact: Julie Dagnon, (509) 422-7139

Golder has been supporting watershed planning in the Methow Basin since the State's original watershed Pilot Project in 1994 under the Chelan Agreement, including development of a calibrated GIS-based water balance. Currently, Golder is supporting the WRIA 48 Planning Unit with development of hydrologic baseline study; development of a streamflow measurement protocols; collection of streamflow data on 14 tributaries to the Methow River; coordination of an irrigation diversion measurement program; and development of an information library system with web-accessibility. This project also involves developing a water rights assessment, structured information management system, and database; and preparation of documentation to support Phase II Watershed Planning requirements.

Hydrologic Support to Methow Basin Planning Unit – Okanogan County (2000) Compiled existing hydrologic data and references and updated a monthly water balance for each sub-basin. Provided support to the US Geological Survey with development of an integrated hydrologic model using USGS's MMS modeling system.

Methow Basin Stream Gaging Program – Okanogan County (2000/2001)
Developed technical procedures and specifications for installation, development and monitoring of 14 stream gages in the Methow Basin. Focus was on tributary drainages to the Methow and their relationship to irrigation diversions and mainstem gages maintained by the USGS.

Methow Basin Ditch Monitoring Program – Okanogan County (2000/2001) Provided coordination and local liaison with the US Bureau Reclamation during installation of 17 adjustable ramp flumes and 7 rectangular weirs. Developed an updated GIS coverage of ditches, headgates, and fish screens.

Methow Basin Data Management Program– Okanogan County (2000/2001) - Developed data management tools for Methow Basin watershed planning, including a GIS database and a web site with downloadable content and other information.

Project: Weowna Park, Bellevue, Washington
Client: Bellevue City Parks and Recreation
Reference: Dan DeWald, City of Bellevue Parks and Community Services Department
(425) 452-6048

This project was awarded a Local Outstanding Civil Engineering Achievement in 2000 by American Society of Civil Engineers Golder was the geotechnical and hydraulic consultant in a multi-disciplinary team, selected to stabilize a highly erosive section of Weowna Creek as it passes through the park. Diversions into the creek and

watershed development dramatically increased flows, causing massive incision of the channel, which includes: two major nick points on the order of 20 ft and many smaller ones, numerous large scale bank failures, and extensive mass wasting. Developed a one-dimensional sediment transport model with variable flows and movable boundaries to determine the effectiveness of various alternative solutions. Provided hydraulic design criteria for instream features, including log weirs, cascades, and waterfalls to help slow further incision. Provided geotechnical investigations and recommendations for bank stability, the sediment pond, and the waterfall. Also designed the soil nail supported, shotcrete waterfall. Provided design criteria for a sediment trap at the downstream end of the park to limit sediment export. All aspects of the designs focused on maintaining the natural beauty and integrity of the park.

Project: Watershed Planning, Little and Middle Spokane Basin (WRIAs 55 and 57)
Client: Spokane County Public Works, Stan Miller, (509) 477-7259
Golder is currently involved in data collection and analysis for the Level 2 Watershed Assessment of the Little and Middle Spokane Basins. Level 2 project work will involves instream flow studies, and development of an integrated climate-surface water-groundwater computer model to simulate the hydrologic processes of the basins. The model will be used to support development of the Phase III watershed plan.

Project: Groundwater Supply Feasibility Study
Client: East King County Regional Water Association (RWA)
Contact: Bob Pancoast (425) 880-6721
Description: Golder Associates were retained by the RWA to investigate the feasibility of developing a 40 to 100 MGD groundwater supply source in the Upper Snoqualmie Valley of Washington. A time domain electromagnetic (TDEM) survey was performed to evaluate the stratigraphy over approximately a 50 square mile area of the North Fork, Middle Fork and South Fork Snoqualmie Headwaters area. The survey was used to estimate the potential thickness of the valley-fill glacial fluvial deposits and to target potential test well locations. A groundwater model was developed of the Upper Snoqualmie Valley Aquifer System using the USGS MODFLOW code. The model was used to evaluate potential well locations and the impacts of the wells on other groundwater users and on flows in the Snoqualmie River. Subsequently, a 40 MGD wellfield layout was developed including well locations, pipeline routing, blending with existing supplies, capital and operating cost and permitting issues. Environmental studies were performed to document the presence of salmonids in the Upper Snoqualmie Basin. Golder has also developed a project web site for the client to increase awareness of the project and promote the use of groundwater for in-stream flow augmentation during low flow periods.

DVS Environmental, Inc.

Lake Pend Oreille Nearshore TMDL and Pend Oreille River TMDL

Lake Pend Oreille Nearshore TMDL
The nearshore nutrient TMDL for Lake Pend Oreille was prepared by Tetra Tech Inc. in collaboration with the Tri-State Water Quality Council, the Idaho Department of Environmental Quality (IDEQ), and the U.S. EPA (EPA) and was approved in 2002. The TMDL used existing water quality and related data, Geographical Information Systems, and computer models to establish a lake wide average water quality target for total phosphorus in the nearshore areas of Lake Pend Oreille as well as total load allocations of total phosphorus for the nearshore areas. Principal hydrogeologist David Stasney, of DVS Environmental Inc. (DVS INC.), represented the State of Idaho DEQ and worked closely with Tetra Tech Inc. in the development of the nearshore TMDL.

Pend Oreille River Assessment and TMDL development
DVS Inc. was contracted by Tetra Tech Inc. in 2003 to develop a scope of work and Quality Assurance Project Plan (QAPP) for IDEQ and EPA approval on the Pend Oreille River in Idaho. DVS Inc. was also contracted to conduct physical, chemical, and biological monitoring and develop a written report to aid in the assessment of the Pend Oreille River in Idaho for TMDL development and implementation for the IDEQ. Initial monitoring and site reconnaissance began in the summer of 2003 by DVS Inc. and the QAPP was approved by all parties in May, 2004. DVS Inc. will continue to monitor physical, chemical, and biological parameters the Pend Oreille River during the summer of 2004 and submit a written report to Tetra Tech Inc. by October 2004.
Contact:

Jessica Koenig
Tetra Tech, Inc.
10306 Eaton Place, Suite 340
Fairfax, VA 22030
phone: 703-385-6000 x107
fax: 703-385-6007
email: jessica.koenig@tetratech-ffx.com

Lake Pend Oreille TMDL Implementation Plan Development and Water Quality Monitoring Program

Lake Pend Oreille TMDL Implementation Plan Development
DVS Inc. was contracted by the Tri-State Water Quality Council (TSWQC) to write the TMDL implementation plan for the nearshore areas of Lake Pend Oreille. The draft implementation plan included identifying stakeholder groups and responsible participants; working with local, state, and federal governments to obtain information about existing and ongoing projects; develop proposed management actions and a list of potential projects from all stakeholders and interested parties. The first of two public meetings was held in October of 2003. A detailed monitoring program was developed by DVS Inc. and included into the plan in early 2004. The final public meeting is scheduled for June 2004.

Lake Pend Oreille Water Quality Monitoring Program
DVS Inc. was contracted by the TSWQC in 2003 to develop a Quality Assurance Project Plan for monitoring the open waters of Lake Pend Oreille and conduct water quality sampling and analyses. The QAPP and open water sampling for nutrients and related limnology data was developed in direct support of the border nutrient agreement signed between the states of Idaho and Montana in 2002. DVS Inc. has been contracted to continue the open water sampling for 2004.

Contact:
Ruth Watkins, former executive director
Diane Williams, acting executive director
Tri-State Water Quality Council
307 N. 2nd, Suite 12
Sandpoint, ID 83864
(208) 265-9092

Lake Pend Oreille nearshore algae growth and water quality study
DVS Inc. was contracted in 2003 by the University of Idaho and Dr. C. Michael Falter to aid in the collection of water quality and algae samples at 13 nearshore sites of Lake Pend Oreille, Idaho. The study was designed to replicate an earlier study conducted by Dr. Falter in the early 1990's to assess changes and or trends in water quality of the nearshore areas. DVS Inc. developed the Quality Assurance Project Plan which was approved by the EPA in 2003. DVS Inc. conducted all water quality and algae sampling, including the placement of artificial growth media in the Lake both unaided and with the cooperation of Dr. Falter. Sampling was conducted from June through September 2003. Results of the study will be published in 2004 by Dr. Falter.

Contact:
C. Michael Falter, Ph.D.
Limnology & Aquatic Ecology
Professor Emeritus, University of Idaho
736 Homestead Place
Moscow, ID 83843-3241
Voice / Fax 208-882-3676
cmfalter@moscow.com or cmfalter@uidaho.edu

4.1.2 Company Qualifications

Information presented in this section includes general company information for the primary contractor, including a description of how the primary contractor will communicate with DEQ, followed by information for the subcontractors. Narrative descriptions of company experience pertinent to each service for the firms on the team follow the general company information. To facilitate review, information about company qualifications specific to each service is presented in Tables 3 and 4, at the end of this section. Table 3 highlights selected project experience specific to each service. Table 4 provides summaries of personnel and experience related to each service.

Primary Contractor and Managing Office:

Watershed Consulting, LLC
410 Wisconsin
Whitefish, MT 59937
Telephone: (406) 862-3565
Fax: (425) 862-4341
Contact email: amy@watershedconsulting.com

Principal Officers:
Steve Buckley, M.S., P.G. Hydrologist/Geomorphologist (406) 862-3565
Amy Chadwick, M.S. Water Quality Specialist/Riparian Ecologist (406) 862-3565
Mike Koopal, B.A. Fisheries Biologist (406) 862-3565
Mark VanderMeer, M.S. Forest Ecologist/Restoration Ecologist (406) 862-3565

Other Technical Staff:
Camisha Booth, Natural Resource Specialist
Peter Spatz, Water Quality Specialist

Legal Status:
Watershed Consulting, LLC is a Limited Liability Corporation, founded in 1994.

Watershed Consulting, LLC, was formed in 1994 by professionals specializing in watershed assessments, and stream, riparian, and forest ecological restoration. We have the local knowledge about natural resource issues and sociological issues necessary to define concerns for water resources, the issues affecting watershed management in Montana, and viable solutions for improving water quality and watershed condition. We pride ourselves in our success at working with private landowners, gaining access in potentially difficult situations to conduct assessments, giving landowners a sense of ownership of water quality restoration efforts, and educating landowners and other stakeholders about the importance of maintaining healthy stream systems. Our positive working relationship with Montana State and federal agencies, and with watershed groups, individual landowners, and private companies allows us to facilitate communication among different stakeholders to define common goals and cooperate toward solutions for watershed restoration.

We have ten years of experience in all facets of watershed assessment, water quality monitoring, stream reach characterizations, effectiveness monitoring, stream restoration, range and forest management, fish habitat improvement, and floodplain stabilization and revegetation. Our holistic approach utilizes the talents from a multi-disciplinary team of scientists, each with solid experience and expertise in his/her specific discipline. Our team has expertise in watershed hydrology, geomorphology, fisheries biology, water quality, riparian grazing management, geographic information systems, forestry, forest soil sciences, botany, and vegetation restoration. Together, this team has consistently provided our clientele practical management recommendations and has produced quality solutions for watershed restoration.

Watershed Consulting, LLC has current projects throughout Montana, and regularly provides services in Idaho, Washington, and South Dakota. Our clients are local, state, federal and tribal agencies, private corporations, private landowners, watershed groups and non-profit entities. Examples of some of our clients include: Montana Department of Natural Resources Conservation; Montana Department of Environmental Quality;

Montana Fish, Wildlife, and Parks; the Clearwater National Forest; the Salish-Kootenai Confederated Tribes; the Flathead Basin Commission; the Nez Perce Tribe; Ruby Valley Technical Advisory Committee; Sun River Watershed Council; Teton River Watershed Council; Flathead Conservation District; U.S. Fish and Wildlife Service; USDI Bureau of Land Management; USDA Forest Service; and the Federal Highways Administration.

Watershed Consulting, LLC has a solid proven track record providing a full range of interdisciplinary services including:

- Watershed Assessment and Analysis
- Water Quality Monitoring (Physical, Chemical, and Biological parameters)
- Watershed Restoration Planning and Monitoring for TMDL Development
- Review of existing data for stream characterization
- Review and development of Environmental Impact Statements
- Fish Habitat Assessment and Improvement
- Fisheries population investigations
- Environmental Permitting
- Wetland Delineation
- Channel Design and Stream Restoration

Project coordination and communication with the State
Watershed Consulting, LLC, will be responsible for project oversight and delivering the highest quality product for all projects on this contract. Watershed Consulting will facilitate coordination among project managers and quality control personnel and will be responsible for communicating regularly with State entities to assure that project goals are being met and provide interim and final results. We have the capabilities to present results and otherwise communicate with the State by whatever means are preferred by the contracting agency. We are familiar with the reporting processes required by state agencies and understand the political climate concerning the TMDL process and other natural resource issues. The principal officers of Watershed Consulting have several years of experience working on State contracts and have a positive working relationship with many agency personnel. We have successfully worked with DEQ, other state agencies, and watershed groups in the past to prescribe and implement improved water quality management, and look forward to lending our experience and expertise to future projects.

Amy Chadwick is the Project Director and Point of Contact for this contract. She will also be available to attend meetings as requested for State contracts.

Subcontractor Company Information

Golder Associates, Inc.

Golder Associates is an international group of consulting companies providing comprehensive environmental and engineering consulting services to a wide range of industries. Founded in 1960, Golder Associates has become one of the world's largest and most trusted specialist consulting firms, with over 2,600 professionals in over 80 offices throughout the United States, Canada, South America, Europe, Asia and Australia. We provide comprehensive surface and groundwater quality sampling, modeling, analysis, GIS, and remote sensing services to federal, state, tribal, and private organizations. Golder Associates has completed projects in more than 140 countries. Golder Associates is 100% employee owned and follows a philosophy of broad ownership. This ensures a long-term commitment to provide quality-consulting services with the appropriate blend of science and engineering, integrated with strong project management skills.
Ecological services provided by Golder include the following:

- Environmental engineering
- Environmental regulatory permitting
- Impact evaluation and monitoring
- Groundwater/Hydrologic analysis
- Wetland delineation
- Restoration and remediation
- Fish and wildlife assessment
- Natural Resource Damage Assessment
- Geology/geotechnical
- Decision support software and services
- Cultural assessment
- Hydraulic modeling

Golder has extensive experience in GIS, remote sensing, surface and ground water modeling, statistical analysis of water quality data, irrigation design and land use planning, and information transfer. Golder will be the primary subcontractor for engineering, graphics, and mapping, and will be the technical lead in those services. The Golder personnel included in this team have experience with aquatic systems similar to those in western and eastern Montana, and have worked with Watershed Consulting on several water resource projects in Montana.

Golder is widely known for its technical expertise, breadth of services, innovative solutions and use of in-house tools, software and web-based programs. The company is consistently rated each year by Engineering News Record as one of the world's top design firms. Most recently, Golder was ranked 10th on ENR's top 20 list of Environmental Science firms.

Donna DeFrancesco, the project manager at Golder Associates for this contract, is primarily at the Coeur d'Alene Idaho office and will be the prime contact at Golder for any subconsultant task orders. Personnel from Redmond, Washington, will also provide services for this contract, particularly for modeling, engineering and GIS services. Donna is in close communication and works part-time at the Redmond office, and will coordinate subcontractor responsibilities for Golder. The Watershed Consulting project manager for this contract has worked closely with personnel from both Golder offices on TMDL projects over the last two years, and will be responsible for coordination with all subcontractors.

DVS Environmental, Inc

Since their incorporation in 2002, DVS Environmental has developed working relationships with environmental consulting firms, federal, state, and local governments, non- profit organizations, tribes, and various stakeholder groups through successful project experience. They offer over 15 years of collective experience in surface and ground water hydrology, geology, environmental permitting, and public outreach and education.

DVS Environmental maintains close communication with Watershed Consulting and the Coeur d'Alene office of Golder Associates. Their broad experience in TMDL-related projects compliments the skills and experience of Watershed Consulting and Golder Associates, and increases the breadth of expertise for TMDL and other water resource projects. DVS Environmental Inc. ensures client satisfaction by developing relationships that last beyond any one project with leadership from Principal Hydrogeologist David Vaughn Stasney.

Table 3. Selected Projects Applicable to Service Categories offered by the Watershed Consulting team.

	Fixed Station and Probabilistic Design	Water Quality Monitoring – Lakes and	Water Quality Monitoring -Reference Sites	TMDL Targets	TMDL Source Assessment and Delineation	TMDL Load Allocations	Total Maximum Daily Loads	TMDL Stakeholder Participation	TMDL Effectiveness Monitoring	GIS Services	Remote Sensing	Water Quality Modeling	Statistical Analysis	Revegetation Services	Communication/ Educational Services- Information & Education	Information Transfer & TMDL Technical Editing	Land Use Planning Services	Preparation of Technical Manuals or Circulars
Watershed Consulting, LLC																		
Ruby River TPA TMDL Phase 1 and 2	★	★	★	★	★	★	★	★	★	★	★		★			★		
Ashley Creek Watershed Assessment/Restoration	★	★	★	★	★			★	★	★	★		★	★	★		★	
Ashley Creek Restoration and Monitoring Plan		★		★	★			★	★	★	★							
Blackleaf Fish, Amphibian and Watershed Feature Inventory & Assessment		★	★							★	★							
Water Quality Monitoring Stillwater State Forest	★	★	★		★				★	★	★	★	★					
Water Quality Gage Installation and Monitoring: Nature Conservancy, Murdock Property	★		★	★	★				★	★	★							
Whitepine Creek Water Quality Assessment	★			★	★				★	★								
Black Mountain Post-Fire Restoration								★						★			★	
Education & Training: Forest Restoration, Severe Disturbance Assessments; Revegetation, Biophysical Assessments								★						★	★			
EA and EIS Fisheries Investigations, Coal Creek State Forest				★	★				★			★	★					
DVS Environmental, Inc.																		
Lake Pend Oreille Nearshore TMDL		★		★	★	★	★	★	★							★	★	
Pend Oreille River Assessment and TMDL development		★	★					★								★	★	
Lake Pend Oreille TMDL Implementation Plan Development		★		★	★	★		★	★							★	★	
Lake Pend Oreille Water Quality Monitoring Program		★	★					★	★							★		
Lake Pend Oreille nearshore algae growth and water quality study		★	★						★							★	★	

	Fixed Station and Probabilistic Design	Water Quality Monitoring – Lakes and	Water Quality Monitoring -Reference Sites	TMDL Targets	TMDL Source Assessment and Delineation	TMDL Load Allocations	Total Maximum Daily Loads	TMDL Stakeholder Participation	TMDL Effectiveness Monitoring	GIS Services	Remote Sensing	Water Quality Modeling	Statistical Analysis	Revegetation Services	Communication/ Educational Services- Information & Education	Information Transfer & TMDL Technical Editing	Land Use Planning Services	Preparation of Technical Manuals or Circulars
Golder Associates, Inc.																		
Ruby River TPA TMDL Phase 1 and 2					★					★	★	★	★					
Weowna Park Engineering Design										★		★		★				
Pend Oreille Water Quality	★							★		★					★	★	★	
Groundwater Supply Feasibility Study										★		★			★		★	
Colville Water Watershed Planning and Water Quality	★							★		★	★				★	★	★	★
Spokane River/Lake CdA FERC Relicensing	★	★	★					★		★	★	★	★					
Alberta Ground Cover Classification										★	★							
North Saskatchewan River Two – Dimensional Water Quality Modeling												★	★					
Methow Watershed Planning	★									★		★	★				★	
Spokane Watershed Planning										★		★	★				★	

★ = Tasks and/or skills necessary for this service were included in this project.

Table 4. Key Personnel experience and education applicable to service areas offered by the Watershed Consulting team.

	DEGREES	YEARS OF RELATED EXPERIENCE	Water Quality Monitoring -Fixed Station and Probabilistic Design	Water Quality Monitoring – Lakes and	Water Quality Monitoring -Reference Sites	TMDL Targets	TMDL Source Assessment and Delineation	TMDL Load Allocations	Total Maximum Daily Loads	TMDL Stakeholder Participation	TMDL Effectiveness Monitoring	GIS Services	Remote Sensing	Water Quality Modeling	Statistical Analysis	Revegetation Services	Communication/ Educational Services- Information & Education	Information Transfer & TMDL Technical Editing	Land Use Planning Services	Preparation of Technical Manuals or Circulars
Watershed Consulting																				
Steve Buckley	MS Geology BS Geology	19	★	★	★	★	★	★	★	★	★	★	★		★	★				
Amy Chadwick	MS Forestry BA Biology	11	★	★	★	★	★	★	★	★	★	★	★			★	★	★		
Mike Koopal	BA Biology	13	★	★	★	★	★				★					★				
Mark Vander Meer	MS Forestry	16		★			★				★					★	★		★	★
Camisha Booth	MS Resource Conservation BA Biology	6	★	★			★					★	★		★	★	★			
Peter Spatz	BS Resource Conservation	6	★	★	★		★					★								
DVS Environmental																				
David Stasney	MS Geology/ Hydrogeology BS Envir. Engineering &Geology	12	★	★	★	★	★	★	★	★	★		★		★		★	★	★	★
Golder Associates																				
Donna DeFrancesco	BA Biology	13	★	★	★	★	★	★	★	★	★		★	★	★	★	★	★	★	★
Bryony Hansen	MS Hydrogeology	13	★	★	★						★		★	★	★			★	★	
Andreas Kammereck	P.E Water Resource Engineering	12	★											★		★	★		★	
Gary Lau	BS	5										★	★							
Andrews Takyi	PhD Water Resources Engineering	18		★	★						★			★	★					
Colin Cox	BS	11										★	★	★	★					

4.1.3 Method of Providing Services and Quality Assurance

TMDL Phase II monitoring has been completed for the Ruby River TMDL. The monitoring plan for Ruby TMDL Phase II monitoring is used as an example to illustrate our method of providing services and quality assurance. In addition, Watershed Consulting completed QAPP for Ruby TPA TMDL monitoring. The example monitoring plan and QAPP from the Ruby Watershed TMDL is included in Appendix A, Methods. Watershed Consulting works cooperatively with MDEQ, DNRC, and other State agencies to develop and finalize task orders for monitoring services, and develops work plans cooperatively with the client after participating in project kick-off meetings. Watershed Consulting initiates regular communication with the client throughout all phases of the project and reports progress in regular Progress Completion Reports, according to the project timeline.

DVS Environmental works with diverse stakeholder groups and large environmental consulting firms to develop detailed scopes of work and quality assurance project plans (QAPPs) in accordance with EPA standards for watershed restoration and conservation projects specific to land use planning and the development of Total Maximum Daily Loads (TMDLs).

4.1.4 Staff Qualifications

This section includes Staff Qualifications outlined below in Tables 5 and presented in more detail in resumes in Appendix B.

Table 5. Qualifications of Key Personnel

	DEGREES	YEARS OF EXPERIENCE	YEARS EXPERIENCE ON SIMILAR PROJECTS	SPECIALTY TRAINING	HOURLY RATE
Watershed Consulting, LLC					
Principal Officers					
Buckley, Steve	MS	19	11	▪ ARC/INFO (ESRI) ▪ Watershed Assessment and Restoration (USFS) ▪ Applied Fluvial Geomorphology (Rosgen) ▪ Watershed Systems Modeling (USGS) ▪ Managing the NEPA process/Nepa Document Writing (Shipley) ▪ Mine Design, Permitting, and Reclamation (SEG)	$65
Chadwick, Amy	MS	12	5	▪ Wetland Mitigation (PSU), 2004 ▪ ArcGIS 8.3 (MLM GIS), 2003 ▪ HGM Functional Assessment of Riverine Floodplain Wetlands, 2000 ▪ Applied Fluvial Geomorphology (Rosgen), 1997 ▪ Wetland Delineation (WTI), 1998 ▪ RWRP Riparian Inventory and Assessment (UM), 1997	$65
Koopal, Mike	BS	13	5	▪ USFS R1/R4 Assessment ▪ EMT	$65
VanderMeer, Mark	MS	16	8	▪ Graduate coursework focusing on soil restoration and sustainable forestry ▪ Biophysical Monitoring Training 2004. Forest	$65

	DEGREES	YEARS OF EXPERIENCE	YEARS EXPERIENCE ON SIMILAR PROJECTS	SPECIALTY TRAINING	HOURLY RATE
				Stewards Guild. MT ▪ Bioengineering Training 2002. NRCS. MT ▪ Forest Road Obliteration Training (Assessment, Planning &Techniques) 1999. Pacific Watershed Associates. CA ▪ Bioengineering and Revegetation Techniques. 1994. Denali National Park and Preserve, AK ▪ CPR	
Technical Staff					
Booth, Camisha	MS	6	3	▪ Wilderness First Responder – Wilderness Medicine Institute – Pitkin, CO	$35
Spatz, Peter	BS	8	6	▪ Turbidity as a Surrogate for Sediment Sampling Workshop, Reno, NV, April 2002. ▪ Data Collection Platform (DCP) and electronics, Austin TX, 2001 ▪ Professional experience and training in USGS protocols for water quality monitoring and flow measurement	$35
DVS Environmental, Inc.					
Stasney, David	MS	13	13	▪ State of Washington licensed Hydrologist ▪ State of Washington licensed Hydrologeologist	$55
Golder Associates, Inc.				▪	
DeFrancesco, Donna	BA	12	12	▪ Natural Channel Design, Channel Geomorphology (UW) ▪ Wetland Restoration/Construction Techniques ▪ Riparian Inventory Procedures (UM) ▪ Wetland Delineation	$70
Kammereck, Andreas	MS	12	12	▪ P.E. Certification for the State of Washington	$100
Yang, Adrianne	MS	4	4	▪ E.I.T.	$80
Cox, Colin	BS	11	11	▪ AutoCAD and CAD-based applications	$65
Lau, Gary	BS	6	6	▪ GIS; Visual basic, Programming	$65
Hansen, Bryony	MS	9	9	▪ MODFLOW	$75
Takyi, Andrews	PhD	13	13	▪ Professional Training in water resources Engineering ▪ Wide variety of modeling software	$120

4.2 Offeror Qualification Requirements – Specific Service Categories

This section contains tables summarizing personnel qualifications and project experience applicable to each service area, addressing subsections 4.2.1- 4.2.13, 4.2.17, 4.2.19, and 4.2.21- 4.2.23. Descriptions of qualifications for specific service categories have been provided in Section 3.5.

All personnel assigned to this contract have several years of pertinent experience and higher education degrees. Table 6 provides a summary of roles of all personnel by task.

Table 6. Personnel Roles and Availability by Service Area

Name	Company	Role	% Availability
Water Quality Monitoring- Fixed Station Monitoring			
Amy Chadwick	Watershed Consulting, LLC	Technical Lead/Project Coordinator	40
Steve Buckley	Watershed Consulting, LLC	Technical	20
Peter Spatz	Watershed Consulting, LLC	Technical	60
Mike Koopal	Watershed Consulting, LLC	Technical	20
David Stasney	DVS Environmental	Groundwater monitoring technical lead	50
Water Quality Monitoring- Streams and Lakes			
Amy Chadwick	Watershed Consulting, LLC	Technical Lead/Project Coordinator	40
Steve Buckley	Watershed Consulting, LLC	Senior Quality Control	20
Peter Spatz	Watershed Consulting, LLC	Technical	60
Mike Koopal	Watershed Consulting, LLC	Technical	20
David Stasney	DVS Environmental	Lake monitoring technical lead	50
Camisha Booth	Watershed Consulting, LLC	Technical	60
Water Quality Monitoring- Reference Sites			
Amy Chadwick	Watershed Consulting, LLC	Project manager/Quality Control	40
Steve Buckley	Watershed Consulting, LLC	Technical Lead	20
Camisha Booth	Watershed Consulting, LLC	Technical	60
Peter Spatz	Watershed Consulting, LLC	Technical	60
Mike Koopal	Watershed Consulting, LLC	Technical	20
TMDL Targets, TMDL Source Assessment, TMDL Load Allocations, Total maximum Daily Loads, TMDL Stakeholder Participation, TMDL Effectiveness Monitoring			
Amy Chadwick	Watershed Consulting, LLC	Project manager/Quality Control	40
David Stasney	DVS Environmental	Technical lead	50
Steve Buckley	Watershed Consulting, LLC	Technical	20
Camisha Booth	Watershed Consulting, LLC	Technical	60
Mike Koopal	Watershed Consulting, LLC	Technical	20
Peter Spatz	Watershed Consulting, LLC	Technical	60
Donna DeFrancesco	Golder Associates	Technical	20
Revgetation Services			
Amy Chadwick	Watershed Consulting, LLC	Project manager/Quality Control	40

Steve Buckley	Watershed Consulting, LLC	Design/Technical	20
Mark VanderMeer	Watershed Consulting, LLC	RevegetationTechnical Lead	35
Camisha Booth	Watershed Consulting, LLC	Technical	60
Mike Koopal	Watershed Consulting, LLC	Technical	20
Peter Spatz	Watershed Consulting, LLC	Technical	60
Information Transfer and TMDL Technical Editing			
David Stasney	DVS Environmental	Project manager/ Technical lead	50
Amy Chadwick	Watershed Consulting, LLC	Technical/Coordination	40
Donna DeFrancesco	Golder Associates	Technical	30
GIS, Remote Sensing, Water Quality Modeling, Statistical Analysis, Prep of Technical Manuals, Information and Education, Land Use Planning Services			
Donna DeFrancesco	Golder Associates	Project Coordination/Technical	30
Bryony Stasney	Golder Associates	Technical	30
Andreas Kammereck	Golder Associates	Technical	20
Gary Lau	Golder Associates	GIS	30
Adrianne Yang	Golder Associates	Technical	30
Andrews Takyi	Golder Associates	Technical	20